# FINAL SEMIANNUAL PROGRESS REPORT NUMBER 15

(Operating Period July 1 through December 31, 2002)

# Prepared For:

Non-City Remedial Design/Remedial Action Settlors Wayne Reclamation & Recycling, Inc. Wayne Waste Oil Site Columbia City, Indiana

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Groundwater Contours – November 2002

Groundwater Contours – December 2002

**Groundwater Remediation Systems** 

Southeast Area

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#### LIST OF ACRONYMS

AST Aboveground Storage Tank
CLP Contract Laboratory Program

DCE dichloroethene

ft feet

gpd gallons per day gpm gallons per minute

HEAST Health Assessment Summary Tables

HDPE high-density polyethylene

InSite InSite, Inc.

IRIS Integrated Risk Information System
ISC-LT Industrial Source Complex – Long-Term

lb pound

MWH MWH Americas, Inc.

NFG National Functional Guidelines O&M operation and maintenance

OM&M Plan Operation, Monitoring, and Maintenance Plan

PCE tetrachloroethene

PCB polychlorinated biphenyl PID photoionization detector

POTW publicly-owned treatment works

ppb parts per billion

PRG Preliminary Remediation Goal PRP potentially responsible party QAPiP Quality Assurance Project Plan

QC quality control

RD/RA Remedial Design/Remedial Action scfm standard cubic feet per minute

SE Southeast

SVE soil vapor extraction

U.S. EPA United States Environmental Protection Agency

TCA trichloroethane TCE trichloroethene

μg/kg micrograms per kilogram
 μg/L micrograms per liter
 v/v volume per volume basis
 VOC volatile organic compound

VC vinyl chloride Weston Roy F. Weston

WRR Wayne Reclamation & Recycling

DMK:TJM:DAW-CAP

<sup>\*</sup>Usdet1s01 Jobs jobs 3868-Wayne RR:01-O&M Activities:6-Reports:Progress Reports:progrpt15-July-Dec2002 Progress Report 15 Final Rev.doc 2100843 018102 EMI

#### 1.0 INTRODUCTION

This document is submitted on behalf of the Non-City Remedial Design/Remedial Action (RD/RA) Settlors. It is intended to summarize operations of the remediation system constructed by the Non-City RD/RA Settlors at the Wayne Reclamation & Recycling (WRR) site (also known as the Wayne Waste Oil Site) located in Columbia City, Indiana for the reporting period of July 1 through December 31, 2002. Included in this document is a description of the system optimization and testing activities that have occurred during the reporting period, as well as the on-going evaluation of the remediation system performance. This document is organized as follows:

- Section 2 Monitoring, Data Validation, and Field Work
- Section 3 Soil Vapor Extraction System
- Section 4 Air Sparging System
- Section 5 Groundwater Extraction System
- Section 6 Groundwater Pre-Treatment System
- Section 7 Off-Gas Treatment System
- Section 8 Conclusions and Recommendations

This document is intended to supplement information presented in previous Semiannual Progress Reports.

#### 1.1 BACKGROUND

Construction of the remediation system at the WRR site took place from between 1994 and January 1995. The remediation system was constructed to remove volatile organic compounds (VOCs) from site soils and groundwater. The system includes:

• A 2,400 standard cubic feet per minute (scfm) soil vapor extraction (SVE) system and a 100 scfm air sparging system (nominal rates):

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• A 150 gallons per minute (gpm) design capacity groundwater extraction

system, including a 1,600-foot (ft) long soil-bentonite cut-off wall

(i.e., slurry wall);

• A groundwater treatment system consisting of an influent storage tank, an

air stripping tower, and a 5,800-ft long force main that delivers treated

groundwater to the Columbia City publicly-owned treatment works

(POTW); and

A 3,200 scfm off-gas treatment system, which was removed from service

effective June 24, 1999.

A layout for the three primary components of the remediation system, including the

groundwater recovery, SVE, and air sparging systems, are indicated on Figures 1, 2, and 3,

respectively.

A Prefinal Inspection of the remediation system was held with the U.S. EPA on

January 27, 1995. The Final Inspection with the U.S. EPA was conducted on

May 18, 1995. The system was operated in startup/shakedown mode from January 1995

through September 1995, pending approval of the Final Operation, Maintenance, and

Monitoring Plan (OM&M Plan) (Montgomery Watson, September 1995). U.S. EPA

approval of the OM&M Plan was granted on September 27, 1995. In addition, U.S. EPA

approval of the Interim Remedial Action Report (Montgomery Watson, August 1995) was

granted on September 29, 1995.

Roy F. Weston (Weston) of Vernon Hills, Illinois (remediation system general contractor)

acted as system operator after the completion of system construction activities that occurred

from September 1995 to January 31, 1998. Weston subcontracted the majority of the

operation and maintenance (O&M) activities to InSite, Inc. (InSite) of Fort Wayne, Indiana. Montgomery Watson (system designer) was responsible for collecting air and water samples in accordance with the approved OM&M Plan during Weston's operation of the system. As of February 1, 1998, Montgomery Watson replaced Weston as the system operator and retained InSite to perform the day-to-day system operation. MWH and InSite continue to operate, maintain, monitor, and optimize system performance. Please note that as of June 21, 2001, Montgomery Watson became Montgomery Watson Harza, and as of January 1, 2003, Montgomery Watson Harza became MWH Americas, Inc. (MWH).

Additional information on the remediation system can be found in the following reports:

- Final Design Evaluation (Warzyn, November 19, 1993);
- Interim Remedial Action Report (Montgomery Watson, August 1995);
- Final Operation, Maintenance, and Monitoring Plan (Montgomery Watson, September 1995) and Addendum (Montgomery Watson, July 1999).
- Final Operations and Maintenance Quality Assurance Project Plan (QAPjP) (Montgomery Watson, September 1995) and Addendum (Montgomery Watson, July 1999).
- Technical Memorandum Number One (Montgomery Watson, February 12, 1996);
- Technical Memorandum Number Two (Montgomery Watson, November 1996);
- Semi-Annual Progress Report Number 3 (Montgomery Watson, August 1997):
- Semi-Annual Progress Report Number 4 (Montgomery Watson, November 1997);
- Semi-Annual Progress Report Number 5 (Montgomery Watson, April 1998);
- Semi-Annual Progress Report Number 6 (Montgomery Watson, September 1998);
- Semi-Annual Progress Report Number 7 (Montgomery Watson, March 1999);

- Semi-Annual Progress Report Number 8 (Montgomery Watson, August 1999);
- Semi-Annual Progress Report Number 9 (Montgomery Watson, March 2000);
- Semi-Annual Progress Report Number 10 (Montgomery Watson, October 2000);
- Semi-Annual Progress Report Number 11 (Montgomery Watson, March 2001);
- Semi-Annual Progress Report Number 12 (Montgomery Watson Harza, September 2001);
- Semi-Annual Progress Report Number 13 (MWH, April 2002); and
- Semi-Annual Progress Report Number 14 (MWH, September 2002).

# 2.0 MONITORING, DATA VALIDATION, AND FIELD WORK

Initial monitoring and optimization testing of the WRR remediation system commenced in early 1995, during the startup/shakedown mode of system operations. Additional monitoring and system optimization testing has continued throughout the close of 2002. Monitoring and testing was conducted primarily to evaluate the performance of the remediation system in removing VOCs from site soils and groundwater, as well as to address the monitoring and testing requirements set forth in the Final OM&M Plan. Several optimization activities were implemented at the site during this reporting period. The monitoring activities conducted and a summary of the data validation report are presented in the following sections.

### 2.1 MONITORING

The primary monitoring activities conducted for the WRR remediation system include:

- Historically, air treatment system monitoring included monthly influent and effluent vapor sampling and analyses. On June 24, 1999 the air treatment system was taken off-line. As of July 1999, only the SVE system effluent (equivalent to the former air treatment system influent) is collected and analyzed on a monthly basis. Monthly samples were collected and analyzed for VOCs during this reporting period. Laboratory analytical results of the SVE effluent sampling are used in air dispersion calculations as part of the on-going assessment of cumulative risks for exposure to carcinogens.
- Monthly groundwater treatment system monitoring is conducted at the site, including influent and effluent groundwater sampling and analyses. The samples were analyzed for VOCs. Additionally, samples of the groundwater treatment system effluent are collected on an annual basis and are analyzed for total metals, inorganics, and polychlorinated biphenyls (PCBs). Laboratory analytical results from the groundwater treatment system

sampling are used to monitor groundwater treatment system efficiency, and to provide effluent water quality information to the Columbia City POTW. During this reporting period, monthly samples were collected from the groundwater treatment system influent and effluent.

- Recovery well samples are collected and analyzed on a periodic basis, primarily during a fall semiannual sampling event. Laboratory analytical results from the recovery well sampling are used to monitor changes in aquifer groundwater concentrations and to assess VOC mass removal rates from the aquifer. Samples were collected from recovery wells RW-1, RW-2, and RW-5 during this reporting period, and analyzed for VOCs.
- Semiannual groundwater sampling and analyses is conducted using the site's monitoring well network. Laboratory analytical results from groundwater sampling are used to assess effectiveness of the remediation system operations and evaluate the progress of the site toward attainment of remedial goals. During October, samples were collected from monitoring wells MW-1D, MW-4S, MW-7S, MW-9S, MW-11S, MW-13S, MW-14S, MW-15S, MW-16S, MW-83AS, MW-83AD, MW-83B, and MW-83DS, and analyzed for VOCs and metals. Due to dry conditions at the site during the fall of 2002, the sample collected from MW-10S was analyzed for VOCs only, as there was inadequate groundwater volume for the complete sample set. Additionally, MW-3S was scheduled for sampling this reporting period, but there was inadequate groundwater volume for sampling.
- Monthly groundwater elevation measurements are collected from the site's
  groundwater monitoring wells to determine groundwater remediation system
  capture zones and to assess horizontal and vertical hydraulic gradients
  within the Southeast (SE) Area. Monthly groundwater elevation readings
  were collected during this reporting period.

• Annually, Columbia City municipal drinking water wells are sampled.

Municipal Well Numbers 7 and 8 are sampled during a fall semiannual

sampling event. During this reporting period, samples were collected from

the municipal wells and analyzed for VOCs, PCBs, metals, and inorganics.

• During this reporting period, wells located on or adjacent to the landfill and

monitored by Columbia City (GM-1 through GM-4) were sampled by

Burgess & Niple, Limited of Columbus, Ohio. Their report (Appendix A)

provides useful data with which to compare against results from

closely-associated wells on the WRR site.

Historically, the primary optimization activities that had been conducted throughout

operation of the remediation system included semiannual in-field measurement of:

• Air injection pressures and flow rates at the site's 40 air sparging wells;

Dissolved oxygen levels in the SE Area monitoring and recovery wells;

• Organic vapor levels within the individual SVE branch lines;

• Field readings from the six branch lines of the SE Area SVE system, for

trichloroethene (TCE) and vinyl chloride (VC);

Vacuum and volumetric flux at individual SVE wellheads; and

Vacuum at the site's 23 SVE monitoring points.

Per a July 11, 2002 Site Progress Meeting, the in-field collection and reporting of these

data was suspended as of October 2002. It was determined this information is no longer

necessary to maintain or adjust system operations.

The results from the above monitoring activities are discussed in the following sections of

this report.

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## 2.2 DATA VALIDATION SUMMARY

Soil, groundwater, surface water, air, and associated quality control (QC) samples were collected from the WRR site in Columbia City, Indiana between July 19 and December 13, 2002. The samples were analyzed by TestAmerica Laboratories, Inc. of Indianapolis, Indiana for one or more of the following parameters: VOCs in air, groundwater, and surface water; and in groundwater, dissolved metals, total metals, total cyanide, biological oxygen demand, chemical oxygen demand, surfactants, ammonia as nitrogen, total Kjeldahl nitrogen, nitrate and nitrite as nitrogen, oil and grease, total phenols, total phosphate, total suspended solids, total solids, potassium, and PCBs. Laboratory analytical results were evaluated in accordance with the U.S. EPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Organic Data Review (October 1999), the U.S. EPA CLP NFG for Inorganic Data Review (July 2002), and the analytical methods.

The analytical data were validated and qualified based on the results of the data evaluation parameters and/or the QC sample results provided by the laboratory. The data validation report is included as Appendix B. The analytical data that did not meet the QC criteria are flagged by a "J" as estimated, or "R" as rejected, for those compounds. Based on the results of this data validation, all data are considered valid and complete as qualified.

# 2.3 FIELD WORK

The major field activities conducted at the WRR site during the reporting period are summarized in Appendix C. The significant field events during the reporting period were:

- The installation of three new SVE wells around monitoring well MW-9S; discussed in Section 3.1.
- Completion of baseline air sampling of the SVE line in the AST Area, immediately after turning on the new wells; discussed in Section 3.2.

- The installation of four new piezometers, to assist in evaluating the effect of the recovery wells on groundwater flow; discussed in Section 5.1.
- The collection and analysis of surface water samples from the Blue River, adjacent to three of the four new piezometers; discussed in Section 5.2.
- The cleaning and rehabilitation of recovery well RW-3, resulting in an improved extraction rate; discussed in Section 5.2.
- The installation of three new totalizers in the treatment building, to allow for a more accurate assessment of total gallons collected by the groundwater recovery system; discussed in Section 5.2.

## 3.0 SOIL VAPOR EXTRACTION SYSTEM

#### 3.1 SYSTEM DESCRIPTION

The SVE system was constructed to remove VOCs from the vadose (unsaturated) zone; the horizontal configuration of the SVE well system is presented on Figure 2. The system consists of 41 SVE wells in the SE Area and 18 SVE wells in the Aboveground Storage Tank (AST) Area. In the SE Area of the site, the SVE wells are grouped together into one of six branch lines, with six to eight SVE wells attached to each line. As shown on Figure 2, the six branch lines are designated as Branches A, B, C, D, E, and F. The six branch lines connect to one main trunk line that conveys extracted vapors to the on-site treatment building, via vacuum blowers housed within the building. Operation of groups of SVE wells is currently controlled manually by a valve at the head of each branch line. In the AST Area, each SVE well is connected via underground piping to one of two branch lines (Branches G and H; Figure 2) that convey extracted vapors to the treatment building. Automatic control valves located in the treatment building control operation of the two AST Area branches. Additionally, the operation of individual SVE wells can be controlled manually by a shut-off valve located at each well.

Three new SVE wells (SVE 56, SVE 57, and SVE 58; Figure 2) were installed in December 2002 to assist in the removal of VOCs in the AST Area near monitoring well MW-9S. Initial start-up sampling of Branch Line G was conducted on December 18, 2003 to document baseline concentrations following installation of the new SVE wells (included in Table 2). Installation of the new SVE wells was completed as outlined in the Final SVE System Expansion Work Plan of August 2002. The new SVE well locations are shown on Figure 2. Soil boring logs and well construction diagrams are included in Appendix D.

During installation of SVE Well 56, the drill rig encountered a wet, silty and sandy sludge material at approximately 10 feet below ground surface (bgs). The material was black and had debris (primarily plastic sheeting) mixed in with the sludge. The material had a strong

petroleum-like odor, and a photoionization detector (PID) reading of 468 parts per million.

Groundwater was encountered at 15 feet bgs. The material was staged in one 55-gallon

drum pending sampling and analysis to determine an appropriate disposal method. The

original SVE Well 56 was properly abandoned. Due to concerns over potential plugging of

the screen by the sludge material, the SVE Well 56 location was located approximately

10 feet east of the original proposed location.

In the SE and AST Areas, cycling of the SVE branch lines began on May 1, 1998. The

cycling applies vacuum pressure to certain branch lines while others are dormant, and after

a specified period of time, the dormant lines are placed under vacuum while those that were

active are turned off. During current cycling procedures, effective as of September 17,

2001, two of the six branch lines are operated simultaneously in the SE Area. The set of

two branch lines operating is rotated approximately once per week. In the AST Area,

operation of Branch Lines G and H was rotated approximately once per week. In the

beginning of October 2002, the operation of Branch H was suspended, and Branch G is

now run continuously.

Vacuum probes are located throughout the SE and AST Areas. These vacuum probes

provide monitoring points where suction within the vadose zone can be measured to

evaluate the SVE system hydraulic radius-of-influence. Several of the vacuum probes are

nested (i.e., both a shallow and a deep probe exist at the nested locations). In addition,

monitoring wells screened at least partially in the vadose zone can also function as vacuum

monitoring points.

3.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Results of the SVE system monitoring and optimization testing conducted during this

reporting period indicate:

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- During the period of July through December 2002, the SVE system was
  operational for approximately 95.8 percent of the time (i.e., percent of total
  hours available). Downtime events were related to: standard regularly
  scheduled operation and maintenance activities; special cleaning and
  maintenance activities; shut down of the knock-out tank; and occasional
  power outages.
- Measurement of vacuum and air flow at individual SVE wells was suspended as of October 2002, as it was determined this information is no longer necessary to maintain or adjust system operations.
- Area air flow rates were collected during the month of October 2002, as part
  of the semiannual sampling event. The SE Area flow rate averaged
  approximately 1,314 scfm (total of 6 branch line measurements made in
  SE Area) and the AST Area flow rate averaged approximately 326 scfm
  (Branch Line G). Flow rate measurements collected during October 2002
  are summarized in Table 1.
- Measurement of vacuum at AST and SE Area monitoring points (other than SVE wells) was suspended as of October 2002, as it was determined this information is no longer necessary to maintain or adjust system operations. Historical vacuum measurements indicated the SVE system had been meeting or exceeding design expectations.
- The acquisition and reporting of PID readings and colorimetric tube measurements for TCE and VC in SVE branch lines on a semiannual basis were suspended as of October 2002, as it was determined this information is no longer necessary to maintain or adjust system operations, and necessary analytical data is gathered with Summa canisters. Laboratory

analytical/Summa canister data collected in October 2002, as well as historical data, are summarized in Table 2.

• Baseline sampling of the SVE line in the AST Area was completed via Summa canisters on December 18, 2002, immediately after turning on the new wells. The laboratory analytical data indicated the presence of TCE and cis-1,2-dichloroethene (cis-1,2-DCE) at 440 and 580 parts per billion (ppb) on a volume/volume basis (v/v), respectively (included in Table 2).

#### 3.3 PROGRESS TOWARD REMEDIAL OBJECTIVES

Based on laboratory analytical results from SVE system effluent air samples collected during the reporting period, it is estimated that approximately 11,328 pounds (lbs) of VOCs have been removed via the SVE system from site vadose zone soils to date. Initial mass removal rates observed at the commencement of SVE system operations were approximately 83 lbs of total VOCs per day. As of December 2002, removal rates for the SVE system were approximately 1.3 lbs total VOCs per day, or approximately 1.6 percent of initial removal rates. This equates to approximately 88.5 percent of VOC mass removal attributed to operation of the SVE and air sparge systems. This decrease in VOC concentrations can be seen on Figure 5, which represents a summary of the air treatment system effluent data.

The primary objective of the SVE system operation is to remove VOCs from site soils in order to attain vadose zone soil site-specific Preliminary Remediation Goals (PRGs), or alternative cleanup levels, as indicated in the Final OM&M Plan and Final O&M QAPjP. For example, soil PRGs for the SE Area are 37.1 micrograms per kilogram (µg/kg) for VC, 186.3 µg/kg for 1,2-DCE, 67.1 µg/kg for tetrachloroethene (PCE), and 19.7 µg/kg for TCE. Soil compliance monitoring will begin when it is determined that an area likely meets the soil site-specific PRGs, as indicated by groundwater detections below the groundwater site-specific PRGs.

#### 4.0 AIR SPARGING SYSTEM

#### 4.1 SYSTEM DESCRIPTION

The air sparging system was constructed to facilitate removal of VOCs from site soils and groundwater. The air sparging system is intended to work in combination with the SVE and groundwater collection systems to remove VOCs from the site subsurface. The system consists of 40 sparge well clusters located in the SE Area of the site (Figure 3). A sparge well cluster is positioned adjacent to each SVE well. Compressed air is delivered from the treatment building to each sparge well through 2-inch diameter subgrade high-density polyethylene (HDPE) piping. As shown on Figure 3, Branch Lines A, B, C, D, E, and F leave the trunk line to feed the sparge wells. Operation of each branch line is controlled by a valve at the junction of the line with the primary air flow artery.

Each sparge well cluster consists of one shallow and one deep well. The shallow/deep cluster was installed to provide treatment of soils above and below a thin clay layer located approximately 20 to 25 ft bgs. The screen interval for each shallow sparge well is positioned immediately above the thin clay layer. The deep sparge wells are screened at the base of the upper aquifer. Each well is instrumented with an air flow rotometer, ball valve, and pressure gauge.

Effective September 17, 2001, delivery of compressed air to the deep sparge wells was discontinued to potentially improve VOC removal. It is believed that the deep area may be experiencing anaerobic degradation of VOC impacts; therefore, discontinuing the deep air sparging may increase VOC degradation. Currently, two of the six sparge branch lines are operated simultaneously, corresponding to the two operating SVE branch lines. The lines are rotated approximately once per week, consistent with the rotation of the SVE lines, with two lines undergoing sparging while four are dormant. During operation, air is delivered to the sparging system for four hours, followed by a four-hour period of inoperation.

Measurement of air flow rates and volumes delivered to the shallow sparge wells, injection

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pressures at the shallow wells, and dissolved oxygen levels in the performance monitoring wells in the SE Area was performed on a semiannual basis through April 2002. No performance monitoring data has been collected since that time, as it was determined this information is no longer necessary to maintain or adjust system operations.

### 4.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Results of the air sparging system monitoring and optimization testing conducted in October 2002 indicate:

- During the period of July through December 2002, the air sparging system
  was operational for approximately 93.4 percent of the total hours available.
  Downtime events were primarily related to: standard regularly scheduled
  operation and maintenance activities; special cleaning and maintenance
  activities; semiannual sampling; and occasional power outages.
- As a means of measuring the contribution of VOC removal by air sparging, vapor samples have been collected from the effluent of the SVE system both with and without air delivery to the sparge wells. Vapor samples were collected using Summa canisters. The results associated with this sampling effort are summarized in Table 2.
- Operation of the sparge system will continue without air sparging to the deep wells, to enable additional data to be gathered regarding anaerobic VOC degradation.

### 4.3 PROGRESS TOWARD REMEDIAL OBJECTIVES

The primary remedial objective of the air sparging system is the removal of dissolved-phase VOCs from the saturated zone in the SE Area of the site, located within the confines of the barrier wall. VOC analytical results for the air samples collected via Summa canisters are presented in Table 2. Testing results collected to date suggest that the

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air sparging system is supporting the remedial objective. In general, monitoring wells in

the SE Area have shown reductions in VOC concentrations since commencement of

remediation system operations.

A historical representation of the concentration of total VOCs in the SE Area, as recorded

during vapor sampling, is provided in Figure 9. The graph depicts the effect of the air

sparge system on VOC removal. Samples are collected with the air sparge system

operating, and then a short time later with the air sparge system suspended. Review of the

laboratory analytical results indicates that the air sparge system's impact on VOC removal

has varied throughout system operations, but the overall trend is decreasing.

Reductions in dissolved-phase VOC concentrations have been noted in monitoring wells

MW-3S and MW-10S (Table 3), located in the SE area and used as two of the key

monitoring wells to track remediation system progress. In addition, reductions in

dissolved-phase VOCs have been noted in recovery well RW-6 (Table 4), also located in

the SE Area. Fluctuations in dissolved-phase VOCs have been observed in the remaining

monitoring wells and recovery wells located in the SE Area since initiation of the air

sparge/SVE treatment system (see Table 3 and Figure 6). Operation of air sparging, and

the groundwater extraction system described in the following section, will continue until

groundwater site-specific PRGs, developed for common VOCs detected at the WRR site,

have been attained.

Development of the groundwater site-specific PRGs are detailed in the Final OM&M Plan

(Montgomery Watson, September 1995). The most conservative PRGs for the commonly

detected constituents of concern are 0.0283 micrograms per liter (µg/L) for VC, 1.43 µg/L

for PCE, 2.54 µg/L for TCE, 70 µg/L for cis-1,2-DCE, and 100 µg/L for trans-1,2-DCE.

These five constituents were noted in the Final OM&M Plan to be the chemicals that will

likely drive the groundwater and soil remediation at the WRR site. Although constituent

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detections are decreasing in groundwater in most of the regularly-sampled monitoring wells, many constituents are still above PRGs. General trends are summarized below.

# AST Area:

- Generally, VOCs below site-specific PRGs in MW-14S and MW-18S.
- TCE above PRG with no obvious trend, but VC at non-detect, in MW-15S.
- cis-1,2-DCE and VC above PRGs, but decreasing, in MW-16S.
- Six VOCs above PRGs in MW-9S: PCE, TCE, and VC are generally decreasing; 1,1-DCE, cis-1,2-DCE, and trans-1,2-DCE have no obvious trend.

# SE Area:

- All VOCs at non-detect in MW-1D, MW-83DD, and MW-13D.
- VC above PRG, but generally decreasing, in MW-83AD.
- Two or more VOCs above PRGs, with varying trends: MW-83DS, MW-83AS, MW-13S, MW-11S, MW-10S, and MW-3S.

#### Recovery Well RW-4 Area:

- cis-1,2-DCE above PRG, but generally decreasing, in MW-7S.
- VC above PRG, with no obvious trend, in MW-4S.

### Northeast Area:

All VOCs at non-detect in MW-83B since 1992.

#### 5.0 GROUNDWATER EXTRACTION SYSTEM

### 5.1 SYSTEM DESCRIPTION

The groundwater extraction system was constructed to capture and control groundwater impacted with VOCs. The groundwater extraction system consists of 10 groundwater recovery wells installed in three areas of the site as follows: three recovery wells in the AST Area (RW-1 through RW-3), one recovery well in the monitoring well MW-7S area (RW-4), and six recovery wells in the SE Area (RW-5 through RW-10) (Figure 1). The extraction system also employs the use of a soil bentonite cut-off wall (i.e., slurry wall), constructed to reduce the pumping rate necessary to produce an upward vertical gradient component to the groundwater flow in the SE Area. Extracted groundwater is pumped to the on-site treatment building through underground HDPE piping.

Four piezometers (PZ-1 through PZ-4) were installed in December 2002, to assist in evaluating the effect of the recovery wells on groundwater flow during the next six-month period. The elevation of the Blue River surface adjacent to the new piezometers will also be determined, at gauge points G-1 through G-4, measured from fixed points near the bank. The piezometer installations were completed as outlined in the Final Hydrological Assessment Work Plan of November 2002. The new piezometer and gauge point locations are shown on Figure 1. Soil boring logs and well construction diagrams are included in Appendix D.

### 5.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Results of the groundwater extraction system monitoring and optimization testing conducted during the reporting period indicate:

 During the period of July through December 2002, the groundwater extraction system was operational for approximately 95.8 percent of the time (i.e., percent of total hours available). Primary downtime events were related to: routine cleaning of recovery pumps and underground collection piping; occasional power outages; routine maintenance; special cleaning and maintenance activities; and shut down of the knock-out tank.

- A summary of system flow rates is included in Table 5. The maximum sustained groundwater recovery rate, for periods of at least 24 hours, during the reporting period was approximately 64.6 gpm in August 2002 (i.e., 93,000 gallons per day [gpd]). During the reporting period, a total of 12,234,000 gallons of groundwater were recovered and treated. The largest total monthly flow was reported at 2,549,000 gallons, for the month of September 2002. The highest average daily recovery rate during the reporting period was 84,967 gpd, which was reported during the month of September 2002. This average was calculated by dividing the total monthly flow by the total number of operational days for the month. Figure 10 is a comparison of cumulative versus the average daily groundwater recovery rates. As of December 2002, a cumulative total of 172,174,521 gallons of groundwater had been recovered, treated, and discharged to the Columbia City POTW.
- Groundwater extraction rates during the reporting period are similar to those noted since the groundwater recovery system began operating in 1995. Review of previous progress reports indicates that sustained groundwater recovery rates have varied from approximately 40 to near 100 gallons per minute. The recovery rate is dependent on the cycling of many of the recovery well pumps; i.e., enough groundwater present in the aquifer to permit continuous operation of the recovery well pumps. On-going, routine operation and maintenance activities are focusing on recovery well pump cleaning and/or repair, and recovery pipe cleaning as necessary to optimize groundwater remediation system performance and meet remedial objectives. Extraction rate increases have been noted in all

recovery wells after cleaning of recovery well pump assemblies and discharge lines.

- Continued cleaning of recovery well pump assemblies and groundwater collection piping has enabled the groundwater recovery system to maintain inward and upward hydraulic gradients in the SE Area.
- Water level elevation data collected during the reporting period is used to evaluate the groundwater table drawdown. This data is included in Table 6 (monitoring well construction details) and Table 7 (groundwater elevation information). Groundwater contour maps that show representations of the groundwater elevations observed and apparent horizontal groundwater flow patterns in the SE Area during each month of the reporting period have been prepared as Figures 4-1 through 4-4, 4-6, and 4-7. Figure 4-4 shows a representation of the groundwater elevations observed across the entire site during October 2002, and the apparent horizontal groundwater flow patterns. Figure 4-5 summarizes recent groundwater sampling analytical results from monitoring wells, recovery wells, and the treatment system influent.
- Laboratory analytical results from the annual sampling of the Columbia
  City municipal drinking water wells located to the north of the WRR site
  can be found in Tables 8 and 9. The historical data indicates that no
  detectable concentrations of constituents attributable to the WRR site have
  been identified in samples from the municipal wells.
- A surface water sample was collected from the Blue River adjacent to three of the four new piezometers (PZ-1, PZ-2, and PZ-4) and analyzed for VOCs. The locations of these three Blue River samples, collected on December 11, 2002, are shown on Figure 1 (BR-1, BR-2, and BR-3). The

laboratory analytical results of Blue River samples collected in March 1988 (from the Remedial Investigation Report by Warzyn Engineering Inc., November 1988) and December 2002 are included in Table 10. No VOCs were detected in the three surface water samples collected in December 2002.

- Recovery well RW-3 extraction rate has improved from less than 10 gpm to approximately 30 gpm following well rehabilitation completed on December 23, 2002. Rehabilitation was necessary due to significant reduction in well capacity; it was accomplished by the initial removal of accumulated sediments in the bottom of the well, cleaning by the addition of a mixture of hydrochloric acid and dispersant to the well followed by fluid withdrawal and discharge to the pretreatment plant, and redevelopment by mechanical surging and removal of additional solids.
- Three new totalizers were installed in the treatment building in December 2002 to allow for a more accurate assessment of total gallons collected by the groundwater recovery system. One totalizer was installed on each of the three existing pipelines that bring groundwater into the building. One totalizer measures the combined flow volume of recovery wells RW-1 through RW-3, one measures the flow of RW-4, and one measures the combined flow volume of RW-5 through RW-10.

### 5.3 PROGRESS TOWARD REMEDIAL OBJECTIVES

The primary remedial objectives of the groundwater extraction system are to remove dissolved-phase contamination from the upper aquifer on site, thereby preventing the potential off-site migration of dissolved-phase constituents to the Blue River or Columbia City municipal well field. Mass removal rates from the groundwater extraction system have ranged from approximately 0.5 to 1.2 lbs of total VOCs removed per day during this reporting period.

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Groundwater elevation data indicates that the slurry wall/groundwater extraction system is effectively maintaining an inward horizontal gradient in the SE Area. Monthly water elevations collected during the reporting period indicate the hydraulic head levels are consistently lower inside the slurry wall as compared to the head levels outside the wall. For example, the December 2002 elevations within the confines of the slurry wall are approximately 3.4 feet lower than water elevations immediately outside the slurry wall (monitoring wells MW-11S and MW-13S in Table 7 and Figure 4-6).

Pre-pumping water level elevations in monitoring wells MW-83AS and MW-83AD, located within the confines of the slurry wall, suggested a downward vertical hydraulic gradient. Upon startup of remediation system pumping in 1995, water level data indicated a shift in this position with an upward gradient noted between MW-83AS and MW-83AD. Groundwater elevation data indicate that an upward gradient was maintained in the SE Area from July through December 2002. Operation and maintenance activities, including on-going recovery pump and groundwater collection pipe cleaning, are conducted to increase groundwater system recovery rates to maintain an upward gradient in the SE Area. Based on the historical observations of groundwater extraction system performance, maintenance of the groundwater extraction system will be conducted frequently (i.e., approximately once per quarter) in order to maintain hydraulic control.

Groundwater levels from the newly-installed piezometers and Blue River surface elevations adjacent to the piezometers are to be collected on a monthly basis from January through June 2003, per the Final Hydrological Assessment Work Plan of November 2002. The data will be used to assist in evaluating the effect of the recovery wells on groundwater flow.

The monitoring wells currently included in the semiannual or annual sampling program, per the requirements of the Final OM&M Plan, are MW-1D, MW-3S, MW-4S, MW-7S, MW-9S, MW-10S, MW-11S, MW-14S, MW-15S, MW-16S, MW-83AS, MW-83AD, and MW-83B. During the reporting period, monitoring wells MW-1D, MW-4S, MW-7S,

MW-9S, MW-10S, MW-11S, MW-13S, MW-14S, MW-15S, MW-16S, MW-83AS, MW-83AD, MW-83B, and MW-83DS were sampled. Monitoring wells MW-13S and MW-83DS were added to the O&M monitoring program during this reporting period per the July 11, 2002 Site Progress Meeting, with samples to be collected every October. MW-3S was scheduled to be sampled in October 2002, but due to dry conditions, there was not enough groundwater available for sampling. MW-10S had very little groundwater available for the same reason, and so only volatile samples could be collected in October 2002. A summary of monitoring well VOC and metals analytical data collected to date is included in Table 3. Recent monitoring well VOC analytical results are also included in Figure 4-5. Copies of laboratory analytical reports are available upon request.

Three site recovery wells, RW-1, RW-2, and RW-5 (Table 11 provides recovery well construction details), were sampled for VOCs during the reporting period. A summary of the recent and historic recovery well VOC analytical data is included in Table 4, and the most recent analytical data for each recovery well is included on Figure 4-5. The most highly impacted groundwater is removed from recovery wells located within the confines of the slurry wall (RW-8, RW-9, and RW-10).

### 6.0 GROUNDWATER PRE-TREATMENT SYSTEM

### 6.1 SYSTEM DESCRIPTION

The groundwater pre-treatment system is designed to remove VOCs from extracted groundwater, prior to discharge to the Columbia City POTW. Groundwater extracted from the site's ten groundwater recovery wells is initially pumped to an influent storage tank for solids settling and equalization. The equalized water is transferred through a bag filter to the top of an air stripping tower via electric transfer pumps. Water cascades downward through the tower packing, while air flows upward from near the tower base, inducing liquid to gas mass transfer of VOCs from the groundwater. The treated water drains from the tower into an effluent sump, which is pumped via a dedicated force main to the Columbia City POTW.

#### 6.2 MONITORING AND OPTIMIZATION TESTING RESULTS

During the period of July 2002 through December 2002, the groundwater pretreatment system was operational 95.8 percent of the time (i.e., percent of total hours of available). Primary downtime events were related to: on-going routine cleaning activities and maintenance; occasional power outages; special cleaning and maintenance activities; and shut down of the knock-out tank due to the force main blockage.

Monthly analytical results of groundwater influent and treated effluent are summarized in Tables 12 and 13. The air stripping tower has consistently removed VOCs prior to discharge to the Columbia City POTW. Total VOC concentrations in air stripping tower influent have fluctuated from 416 to 3,274  $\mu$ g/L since commencement of treatment system operations. Influent groundwater VOC concentrations can vary over time, based on a variety of factors including recovery well cycling, rainfall events, and site water levels. The influent groundwater VOC concentrations during this reporting period began at 1,360  $\mu$ g/L (July 2002) and ended at 2,035  $\mu$ g/L (December 2002) (summarized in Figure 4-5). The average total VOC concentration for the influent during the reporting

period was 1,688  $\mu$ g/L. Average groundwater contaminant mass removal rates since the commencement of remediation system operations have ranged from approximately 0.8 to 13.2 lbs/day of total VOCs. The most recent system data, collected from December 2002, indicates that the groundwater contaminant mass removal rate is approximately 1.2 lbs total VOCs per day, based on an average flow rate of 68,194 gpd and a total VOC concentration in the plant influent of 2,035  $\mu$ g/L.

Treated groundwater that has drained from the stripping tower into the effluent sump is pumped via a dedicated force main to the Columbia City POTW. The present limiting factor for groundwater extraction is the high discharge pressure encountered in the force main. The treated groundwater cannot be discharged at the rate of flow coming into the groundwater treatment system, causing the extraction system to shut down on occasion to allow the effluent pump to catch up.

# 6.3 PROGRESS TOWARD REMEDIAL OBJECTIVES

Laboratory analytical results of the groundwater treatment system monthly effluent sampling, conducted in accordance with the discharge agreement (i.e., the agreement in place prior to February 1, 1998) with the Columbia City POTW, are included in Tables 12 and 13. Analytical results generally indicate low levels of both organic and inorganic compounds to be present in the treated groundwater discharged to the Columbia City POTW. As of February 1, 1998, monthly groundwater treatment system sampling consists of influent and effluent sampling for VOCs only per the new agreement with the Columbia City POTW. Additional non-VOC parameters are sampled for during the annual sampling event conducted in October of each year (Table 13).

The treatment system sampling modifications were approved by the U.S. EPA and the Indiana Department of Environmental Management (Engineering Management, Inc., December 2, 1997).

### 7.0 OFF-GAS TREATMENT SYSTEM

### 7.1 SYSTEM DESCRIPTION

The off-gas treatment system was constructed and operated to remove VOCs from the off-gases of the air stripping tower and the SVE system prior to discharge to the atmosphere. On June 24, 1999, air treatment was discontinued; however, monthly air sampling continues to be conducted on the effluent air stream as a means of monitoring potential risk levels associated with the untreated air stream. Upon entering the treatment building, the combined air stream of the air stripping tower and the SVE system is drawn through an air filter and moisture separator by two blowers connected in parallel. After exiting the blowers, the air stream passes through a heat exchanger prior to discharge to the atmosphere.

#### 7.2 MONITORING AND OPTIMIZATION TESTING RESULTS

Monitoring and optimization testing conducted to date, including the monthly SVE system effluent sampling (which includes air stripping system off-gases), indicate:

Monthly effluent vapor concentrations have decreased by more than one order of magnitude from the beginning of system operations in early 1995 to December 2002. Total VOCs in the air stream have dropped from approximately 83,300 ppb (v/v) in March 1995 to 2,351 ppb (v/v) in December 2002. During the same time period, VC concentrations have decreased from approximately 1,900 to 140 ppb (v/v), TCE concentrations have decreased from 28,000 to 410 ppb (v/v), and cis-1,2-DCE approximately concentrations have decreased from 40,000 1,100 ppb (v/v). The historic monthly air treatment system influent and effluent laboratory analytical results are summarized on Table 14 and on Figure 5. Tables 14 and 15 also include the monthly effluent-only sample results collected since the air treatment system was discontinued on June 24, 1999.

• Calculations have been conducted on the VOC concentrations of off-gas vapor concentrations to assess hypothetical risk levels. Results for both the influent and effluent values indicate hypothetical risk levels to be below the cumulative risk action level of 1x10<sup>-6</sup> (representing a risk of one in one million exposed) during this reporting period. Current and historical air risk calculations are provided in Tables 14 and 15.

# 7.3 PROGRESS TOWARD REMEDIAL OBJECTIVES

The primary objective of the continued on-going off-gas air monitoring is to ensure that the cumulative life-time cancer risk at the site boundary remains less than the cumulative risk action level of 1'x10<sup>-6</sup>. To verify compliance with this objective, air dispersion calculations were completed to determine the maximum concentrations at receptor locations outside the boundary of the WRR site. The Industrial Source Complex - Long-Term (ISC-LT) model was used for the purpose of modeling the dispersion of the effluent from the soil remediation system (Appendix E). The maximum concentrations determined by the air modeling study were multiplied by unit risk factors to estimate the excess carcinogenic risk posed by the hypothetical emissions through the inhalation route. The unit risk factors used in this study were developed from toxicity values included in U.S. EPA's Integrated Risk Information System (IRIS), U.S. EPA's "Health Assessment Summary Tables" (HEAST, Annual FY-1995), and information provided by the U.S. EPA Environmental Criteria Assessment Office. The unit risk factors conservatively assume a chronic exposure to the chemicals for 24 hours a day, 365 days a year, for a 70-year lifetime. (In this Progress Report, references to cancer risk and cancer risk estimates refer to the estimated potential risks as indicated by the use of ISC-LT air dispersion modeling and are not meant to represent or suggest actual risks.)

Air dispersion calculations using the off-gas air data indicates that no exceedances of the  $1x10^{-6}$  action level occurred during this reporting period. Though active air treatment was discontinued on June 24, 1999, monthly effluent air sampling and risk calculations will continue. Air treatment will be reactivated should the results from two consecutive monthly air samples indicate cumulative risks in excess of  $1x10^{-6}$ .

Overall remediation system mass removal calculations indicate that, since inception of treatment system operations, approximately 12,802 lbs of total VOCs have been removed by the SVE and groundwater treatment systems. Of this, approximately 88.5 percent (or 11,328 lbs) is attributed to operation of the SVE and air sparge systems, and approximately 11.5 percent (or 1,472 lbs) is attributed to the groundwater extraction system. Additionally, initial contaminant mass removal rates from the entire remediation system were approximately 88 lbs of total VOCs per day during the startup phase of system operations. This removal rate has decreased to approximately 2.5 lbs of total VOCs per day, as of December 2002. Figure 7 represents a summary of overall site VOC removal rates. Figure 8 represents a summary of total VOCs removed from the site. Table 16 provides the VOC removal rates for the SVE and air stripper systems, taking into account the air flow rates measured during the major spring and fall sampling events.

### 8.0 CONCLUSIONS AND RECOMMENDATIONS

Based on the results of operations to date, the remediation system is removing VOCs from site soils and groundwater. To date, approximately 12,802 lbs of total VOCs have been removed via the soil and groundwater remediation systems. Contaminant mass removal rates have decreased to approximately 2.5 lbs total VOCs per day, versus a startup removal rate of approximately 88 lbs of total VOCs per day. The following recommendations, unless otherwise indicated by the U.S. EPA, will be implemented to improve treatment system performance:

- Continue with the on-going standard operation and maintenance of the remediation system components to continue progress toward achieving the remedial action objectives.
- Continue monthly groundwater treatment system influent and effluent sampling for VOCs, per the discharge agreement with the Columbia City POTW.
- Continue with the on-going recovery well cleaning, pump repair and/or replacement, and groundwater recovery pipe cleaning, as needed to optimize groundwater recovery efficiency and maintain effective hydraulic control.
- Continue cycling the SE Area SVE system branch lines. Continue system
  operation schedule, such that two of the SE Area's six SVE system branch
  lines are operated simultaneously (two lines on, four lines off), with cycling
  of operation occurring approximately every week.
- Continue to sample the off-gas vapor stream to evaluate the potential cumulative excess cancer risks associated with the untreated vapor stream.
   Should the vapor stream continue to exhibit a cumulative excess cancer risk

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less than the 1x10<sup>-6</sup> action level, the off-gas treatment system will remain

Should two consecutive monthly SVE effluent vapor samples

indicate a cumulative excess cancer risk of greater than 1x10<sup>-6</sup>, the air

treatment system will be restarted.

Continue air sparging system operation cycling procedures such that two of

the SE Area's six air sparging system branch lines are operated at one time

(two lines on, four lines off), in conjunction with the corresponding SVE

lines. Cycle the operation approximately every week. Continue operation

of the shallow air sparging wells only.

Collect groundwater levels from the new piezometers and Blue River

surface elevations adjacent to the piezometers on a monthly basis through

June 2003, per the Final Hydrological Assessment Work Plan of

November 2002. The data will be used to assist in evaluating the effect of

the recovery wells on groundwater flow.

The treated groundwater cannot be discharged at the rate of flow coming

into the groundwater treatment system, causing the extraction system to shut

down on occasion to allow the effluent pump to catch up. Evaluate the

possible blockage in the dedicated force main.

DMK/TJM/DAW/CAP

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**Tables** 



Table 1
Summary of SVE Air Flow Rates from the SE and AST Areas, October 2002
Wayne Reclamation and Recycling
Columbia City, Indiana

	Air Flow (	scfm)
Date	SE AREA	AST Area
2-October-02	1,200	350
4-October-02	1,200	350
7-October-02	1,400	330
14-October-02	1,400	330
15-October-02	1,400	320
18-October-02	1,400	320
31-October-02	1,200	280
Average flow:	1,314	326
Maximum flow:	1,400	350
Minimum flow:	1,200	280

SVE = Soil vapor extraction.

SE = Southeast.

AST = Aboveground Storage Tank.

Flow measurement reported in standard cfm (scfm). All flow measurements are approximate.

Vacuum and flow measurements at the individual SVE wells were suspended as of October 2002.

The operation of Branch Line H in the AST Area was suspended in October 2002.

Table 2
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

[					Southeast A		··· <u>·</u>			
					Branches A				· <del></del>	
	(AS-ON)	(AS-ON)	(AS-ON)	(AS-ON)	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)
Constituent	9-Jan-96	15-Fcb-96	16-Feb-96	18-Feb-96	25-Nov-96	27-Nov-96	3-Sep-97	5-Sep-97	18-Nov-97	21-Nov-97
Tetrachloroethene	670	470	470	470	450	370	370	370	240	220
Trichloroethene	9,100	8,600	7,200	7,100	4,000	3,000	2,800	2,800	3,800	3,500
cis 1,2-Dichloroethene	9,600	6,800	6,600	6,400	5,300	3,700	2,900	3,000	4,400	4,300
trans 1.2-Dichloroethene	850	460	540	480	490	340	370	380	460	460
Vinyl Chloride	<84	<72	240	230	61	<34	130	200	89	56
1,1,1-Trichloroethane	1,300	810	770	700	520	340	280	290	270	290
1,1-Dichloroethane	230	230	300	180	120	81	88	82	98	92
Xylenes (total)	<84	<72	<72	<72	<36	<34	<17	<34	<36	<30
4-Ethyltoluene	<84	<72	<72	<72	<36	<34	<17	<34	<36	<30
1,3,5-Trimethylbenzene	<84	<72	<72	<72	<36	<34	<17	<34	<36	<30
1,2,4-Trimethylbenzene	<84	<72	<72	<72	<36	<34	<17	<34	<36	<30
SVE Well Groups	1 - 40D	I - 40D	1 - 40D	1 - 40D	I - 40D	I - 40D	1 · 40D	1 - 40D	1 - 40D	1 - 40D

SVE = Soil vapor extraction

All results reported in parts per billion (volume/volume basis)

AS = Air sparging (on or off)

Table 2
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

					Southeas		_			
<u>Constituent</u>	(AS-ON) 21-Apr-98	(AS-OFF) 28-Apr-98	(AS-ON) 14-Oct-98	(AS-OFF) 16-Oct-98	Branche (AS-ON) 26-Apr-99	(AS-OFF)	(AS-ON) 14-Dec-99	(AS-OFF) 21-Dec-99	(AS-ON) 18-Apr-00	(AS-OFF) 29-Apr-00
Tetrachloroethene	56	100	450	270	53	5	54	58	52	79
Trichloroethene	330	540	2,500	2,900	250	94	650	540	400	710
cis 1,2-Dichloroethene	830	1,000	3,300	3,500	410	210	1,500	1,300	580	1,400
trans 1.2-Dichloroethene	71	74	280	360	40	22	180	160	59	130
Vinyl Chloride	85	<12	<25	<25	12	15	180	29	12	<13
1,1,1-Trichloroethane	47	51	280	190	90	6	100	87	56	74
1,1-Dichloroethane	20	19	70	73	14	5	47	38	17	29
Xylenes (1012l)	23	14	<25	<25	29	5	<9 7	<7 8	<67	<13
4-Ethyltoluene	<12	<12	<25	<25	7	<2	<9 ?	<7 8	<6.7	<13
1,3,5-Trimethylbenzene	<12	<12	<25	<25	<2	<2	<97	<7 8	<67	<13
1,2,4-Trimethylbenzene	13	<12	<25	<25	14	2	<9 7	<7 8	<6 7	<13
SVE Well Groups	1 - 40D	1 - 40D	I - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	I - 40D

SVE = Soil vapor extraction

All results reported in parts per billion (volume/volume basis)

AS = Air sparging (on or off)

Table 2
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

					Souther	ist Area				
					Branch	ies A-F				
	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)	(AS-ON)	(AS-OFF)
Constituent	6-Oct-00	10-Oc1-00	27-Apr-01	23-Apr-01	29-Sep-01	31-Oct-01	23-Apr-02	26-Apr-02	23-Oct-02	28-Oct-02
Tetrachloroethene	52	95	20	<140	<140	<130	47	42	<140	<130
Trichloroethene	920	750	150	140	280	410	300	330	720	430
cis 1,2-Dichloroethene	2,200	1,300	270	150	680	1,500	510	370	1,300	790
trans 1,2-Dichloroethene	160	130	NA	NA						
Vinyl Chloride	130	<82	60	<140	<140	<260	61	18	<140	<130
1,1,1-Trichloroethane	93	75	29	<140	<140	<130	27	19	<140	<130
1,1-Dichloroethane	49	32	<6 9	<140	<140	<130	14	10	<140	<130
Xylenes (total)	<18	<8 2	<5 7	<140	<280	<260	<2 2	<11	<280	<270
4-Ethyltoluene	<18	<82	NA	NA						
1,3,5-Trimethylbenzene	<18	<8 2	<6 9	<140	<140	<130	<1.3	<0 64	<140	<130
1,2,4-Trimethylbenzene	<18	<8 2	<6 9	<140	<140	<130	<1.3	<0 64	<140	<130
SVE Well Groups	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - 40D	1 - <b>4</b> 0D	1 - 40D

SVE = Soil vapor extraction

All results reported in parts per billion (volume volume basis)

AS = Air sparging (on or off)

NA = Parameter not analyzed

October 2002 data was validated to Level IV, no flags were required for the data in this table collected on that date

Table 2
Summary of Summa Canister Sampling for SVE Lines
Wayne Reclamation and Recycling
Columbia City, Indiana

							Ahovean	ound Storage Tan	k Area						
	Branches G&H						Abute	Branch G (E							
Constituent	11-Jan-96	25-Nov-96	3-Sep-97	18-Nov-97	21-Apr-98	16-Oc1-98	21-Apr-99	22-Nov-99	18-Apr-00	2-Oct-00	23-Apr-01	2-Nov-01	23-Apr-02	23-Oct-02*	18-Dec-02**
Tetrachloroethene	1,600	<22	460	67	21	6	2 8	<2 0	58	75	15	71	6 6	<140	<140
Trichloroethene	1,700	140	1,500	420	57	48	8 I	9	590	710	57	150	22	180	440
cis 1,2-Dichloroethene	1,800	660	820	310	110	50	21	24	330	300	21	130	27	<140	580
trans 1,2-Dichloroethene	120	63	59	24	4 8	2.2	<2 0	<2 0	28	27	NA	<0 57	NA	NA	NA
Vinyl Chloride	130	<22	<8 4	22	7	<2 0	2 3	3 6	<7.3	<61	<0 74	2 5	0 92	<140	<140
1,1,1-Trichloroethane	790	2,700	180	65	3 4	2	<2 0	<2 0	55	61	99	33	3 6	<140	<140
1,1-Dichloroethane	39	270	11	6	<2	<20	<2 0	<2 0	9 1	10	1.3	4 6	0 77	<140	<140
Xylenes (total)	55	<22	25	46	57	<2 0	18	2 1	<7.3	31	3 49	41	2 79	<290	<290
4-Ethyltoluene	190	<22	10	3	16	<2.0	4	2 1	<7 3	<61	NA	NA	NA	NA	NA
1,3,5-Trimethylbenzene	120	<22	20	4	6 3	<20	2 2	<2 0	<7 3	<61	<0.71	<0.69	<0 69	<140	<140
1,2,4-Trimethylbenzene	230	<22	12	4	22	<20	7 5	2 8	<7.3	<61	<0.71	<0.69	<0 69	<140	<140
SVE Well Groups	41 - 55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-55	41-43,50,53-58

SVE = Soil vapor extraction

All results reported in parts per billion (volume/volume basis)

NA = Parameter not analyzed

October 2002 data was validated to Level IV, no flags were required for the data in this table collected on that date

The operation of Branch Line H was suspended as of October 2002

<sup>• =</sup> Analyzing laboratory measured to parts per million, instead of parts per billion as in the past

<sup>•• =</sup> Additional sampling following the completion and connection of new SVE wells 56, 57, and 58

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

			<del></del> -		Monitoring W	ell MW-1D (Se	outheast Area)				PRG
Parameter	Date Sampled	8/1988	6/7/1996	11/6/1996	6/12/1997	10/14/1998	10/13/1999	10/2/2000	10/31/2001	10/25/2002	(μg/L)
VOCs (µg/L)							-				
Acetone		ND	ND	NA	NA	NA	ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene		ND	ND	NA	NA	NA	ND	ND	ND	ND	
2-Butanone		ND	ND	NA	NA	NA	NA	NA	NA	NA	
Carbon Disulfide		ND	ND	NA	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	NA	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	973
1,1-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroethane	ľ	ND	ND	ND	ND	ND	ND	ND	ND	ND	[
cis-1,2-Dichloroethen	e I	ND	ND	ND	ND	ND	ND	ND	ND	ND	70
trans-1,2-Dichloroethe	ene l	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Total 1.2-Dichloroethe	ene	ND	ND	ND	ND	ND	ND	ND	ND	ND	(170)
1,2-Dichloropropane		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentanone	: <b> </b>	ND	ND	NA	NA	NA	ND	ND	ND	ND	487
1.1.1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1.1.2-Trichloroethane	i	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane	ľ	ND	ND	NA	NA	NA	ND	ND	ND	ND	[
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethylbenzer	ne	ND	ND	NA	NA	NA	ND	ND	ND	ND	
Vinyl Chloride		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs	Ī	ND	ND	ND	ND	ND	ND	ND	ND	ND	1
Metals (mg/L)											
Arsenic		0.0059	0.005	ND	ND	ND	ND	ND	ND	ND	-
Barium	į	0.132	0.13	0.13	0.12	0.16	0.68	0.14	0.18	0.226	I
Cadmium	j	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium		ND	ND	ND	ND	0.013	ND	ND	ND	ND	-
Cyanide, Total		0.009	ND	ND	ND	ND	ND	ND	ND	ND	
Lead		ND	ND	ND	ND	ND	ND	ND	ND	ND	
Nickel		ND	ND	ND	0.051	ND	ND	ND	ND	0.012	
Zinc		0.013	0.06	ND	0.025	0.031	0.13	ND	0.068	0.072	<b></b>

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Bold = Analyte detected above the laboratory reporting limit. -- = No PRG assigned.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

					Monit	oring Well MW	-3S (Southeas	t Area)				PRG
Parameter	Date Sampled	3/1988	8/1988	11/29/1995	8/27/1996	11/6/1996	6/13/1997	10/14/1998	10/13/1999	10/2/2000	10/31/2001	(μg/L)
VOCs (µg/L)							•					
Acetone		ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene	1	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	
2-Butanone		ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	-
Carbon Disulfide	ŀ	ND	2.3	NA	NA	NA	NA	NA	ND	ND	ND	768
Chloroethane	1	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	
1,1-Dichloroethan	ie '	ND	23	ND	ND	1.5	ND	ND	ND	ND	ND	973
1,1-Dichloroethen	ne	ND	16	ND	ND	1.9	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroethan	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloroet	thene	NA	NA	NA	3,500	2,600	1,200	1,100	1,400	840	733	70
trans-1,2-Dichloro	oethene	NA	NA	NA	110	92	45	54	33	38	42.6	100
Total 1,2-Dichloro	oethene	24,000	6,900	2,200	3,610	2,692	1,245	1,154	1,433	878	775.6	(170)
1,2-Dichloropropa		ND	8.4	ND	ND	3.7	ND	ND	ND	ND	2.1	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentar	none	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	487
1.1.1-Trichloroeth		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1.1.2-Trichloroeth		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane		ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	
Tetrachloroethene	: 1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	1.1	ND	ND	ND	ND	ND	ND	ND	5.0	2.54
1,2,4-Trimethylbe	nzene	ND	ND	ND	ND	NA	NA	NA	ND	ND	ND	
Vinyl Chloride		1,300	430	380	400	260	90	120	310	67	3.3	0.0283
Benzene		ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	3.4	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs		25,300.0	7,385.3	2,580	4,010	2,959.1	1,335	1,274	1,743	945	786.0	- 1
Metals (mg/L)						·						
Arsenic		0.015	0.0234	0.005	ND	ND	ND	ND	0.011	ND	ND	1 - 1
Barium		0.306	0.32	0.08	0.04	ND	ND	0.048	0.28	0.032	0.041	I - I
Cadmium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	I - I
Chromium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total		0.015	ND	ND	ND	ND	ND	ND	ND	ND	ND	ł I
Lead		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	l I
Nickel		ND	0.0151	ND	ND	ND	ND	ND	ND	0.013	ND	I I
Zinc	ļ	ND	0.0126	ND	ND	ND	ND	ND	0.27	ND	ND	I - I

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit.

NA = Not analyzed.

This monitoring well was scheduled for sampling in October 2002, but due to extremely dry conditions at the site, there was inadequate groundwater volume for sampling.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

						-	Mo	nitoring We	1 MW-4S (	Recovery W	ell RW-4 Ar	ea)						PRG
Parameter	Date Sampled	8/1988	7/23/1992	11/28/1995	8/27/1996	6/12/1997	11/18/1997	4/21/1998	10/15/1998	4/12/1999	10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001	4/23/2002	10/23/2002	(μg/L)
VOCs (µg/L)															<del></del>			
Acetone		ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3650
Bromomethane	:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene	e	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	l
2-Butanone		ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Carbon Disulfi	ide	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroetl	hane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	973
1,1-Dichloroetl	hene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroetl	hane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	j
cis-1.2-Dichlor	roethene	ND	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	70
trans-1,2-Dichl	loroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Total 1,2-Dichl	loroethene	ND	ND	ND	4.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	(170)
1,2-Dichloropn	opane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform	· .	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pen	ntanone	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	487
1,1,1-Trichloro	ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1,1,2-Trichloro	ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromometha	ine	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Tetrachloroethe	ene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethen	e	ND	ND	ND	11	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethy	lbenzene	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Vinyl Chloride	; <b> </b>	2	1	ND	ND	ND	ND	12	15	17	29	33	23	13	7.4	6.1	15.1	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	1.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)	l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs		2.7	1	ND	16.6	ND	ND	12	15	17	29	33	23	13	7.4	6.1	15.1	
Metals (mg/L)	1				-													
Arsenic		NA	ND	0.006	ND	ND	ND	ND	ND	ND	0.0082	ND	0.0081	ND	ND	ND	ND	
Barium		NA	0.159	0.13	0.11	0.67	0.28	0.48	0.3	0.49	0.58	0.79	1.1	1.1	0.26	0.26	0.35	
Cadmium		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
Chromium		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Cyanide, Total		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ļ -
Lead	ŀ	NA	ND	ND	0.0032	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.16	ND	-
Nickel		NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.011	ND	ND	ND	
Zinc		NA	0.035	0.02	ND	0.036	ND	ND	0.023	0.025	ND	ND	ND	0.022	ND	ND	0.056	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

					Monito	ring Well M	W-7S (Recove	ry Well RW-	4 Area)				PRG
Parameter	Date Sampled	3/1988	8/1988	11/29/1995	8/27/1996	11/6/1996	6/12/1997	10/15/98	10/13/1999	10/2/2000	10/30/2001	10/23/2002	(μg/L)
VOCs (µg/L)											_		
Acetone		ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	3650
Bromomethane	i	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene	I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2-Butanone	1	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Carbon Disulfide	· 1	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
1,1-Dichloroetha	ne	ND	23	7.4	10	7.4	5.1	ND	ND	ND	2.9	3.4	973
1,1-Dichloroethe	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroetha	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
cis-1,2-Dichloroe	ethene	NA	NA	1,100	980	780	640	87	96	120	187	237	70
trans-1,2-Dichlor		NA	NA	59	74	55	48	23	10	12	21.2	20.6	100
Total 1,2-Dichlor	roethene	2,600	1,900	1,159	1,054	855	688	110	106	132	208.2	257.6	(170)
1,2-Dichloroprop	oane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Penta	попе	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	487
1,1,1-Trichloroet	hane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1,1,2-Trichloroet	hane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane	.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Tetrachloroethen	e l	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene	1	ND	ND	3.2	92	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethylb	enzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Vinyl Chloride		ND	1.3	ND	ND	ND	ND	ND	6.1	ND	ND	ND	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs	-1	2,600	1,924.3	1,169.6	1,156	862.4	693.1	110	112.1	132	211.1	261.0	•
Metals (mg/L)		-			'2''	•							
Arsenic		0.005	0.003	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Barium		0.286	0.191	0.17	0.12	0.16	0.16	0.2	0.77	0.22	0.17	0.202	
Cadmium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	Ì	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total		ND	0.016	0.095	ND	ND	ND	ND	ND	ND	ND	ND	
Lead	ļ	ND	ND	ND	0.0099	ND	ND	ND	ND	ND	ND	ND	
Nickel		ND	ND	ND	0.06	ND	ND	ND	ND	0.006	ND	ND	
Zinc		ND	0.0263	ND	0.02	ND	ND	ND	0.22	ND	ND	ND	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

rameter D									WAII M W.U	· /Aboveor	OHON STOPON	e Tank Area)	1						PRG
Cs (µg/L)	Date Sampled	3/1988	8/1988	7/24/1992	11/7/1995	8/27/1996		11/18/1997					5/4/2000	10/2/2000	4/19/2001	10/30/2001	4/23/2002	10/23/2002	(μg/L)
											***				•		_		
etone		ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	3650
momethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
lutylbenzene	f	ND	ND	ND	4.2	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>-</b>
Butanone	į.	ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
rbon Disulfide		ND	0.59	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	768
loroethane	ı	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
-Dichloroethane	: i	ND	8.3	ND	18	ND	13	ND	16	17	12	5.5	59	13	ND	1.5	1.7	3.9	973
-Dichloroethene	: I	ND	92	ND	56	ND	15	76	17	51	13	18	67	63	ND	5.1	7.6	38.1	0.0167
-Dichloroethane	.	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
1,2-Dichloroeth	hene	NA	NA	NA	30,000	24,000	18,000	NA	10,000	19,000	8,800	NA	43,000	37,000	5,400	3,360	3,600	18,300	70
ns-1,2-Dichloroe	ethene	NA	NA	NA	140	ND	200	NA	190	170	95	NA	350	210	ND	74.9	63.3	122	100
al 1,2-Dichloroe	ethene	33,000	32000	23,000	30,140	24,000	18,200	42,390	10,190	19,170	8,895	8,003	43,350	37,210	5,400	3,434.9	3,663.3	18,422	(170)
-Dichloropropar	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
loroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	ND	ND	ND	ND	0.274
nethyl-2-Pentano	one	ND	2.2	ND	NA	NA	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	487
,1-Trichloroetha	ane	ND	9.9	ND	ND	ND	ND	ND	13	21	13	ND	5.6	6.8	ND	1.3	2.5	5.0	200
,2-Trichloroetha	ane	ND	ND	ND	2.8	ND	ND	ND	8	12	ND	ND	6.4	ND	ND	ND	ND	ND	0.314
romomethane		ND	ND	NA	1.8	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
rachloroethene		ND	27	ND	36	ND	78	220	280	250	720	67	37	97	ND	28	45.9	63.8	1.43
chloroethene		18,000	18,000	9,700	17,000	28,000	24,000	67,000	25,000	12,000	16,000	5,800	5,800	21,000	16,000	4,590	9,300	6,470	2.54
,4-Trimethylben	nzene	ND	ND	NA	4.3	ND	ND	NA	ND	ND	6.2	ND	ND	ND	ND	ND	ND	ND	-
yl Chloride		ND	480	340	1,100	680	200	380	59	ND	72	140	260	140	ND	3.2	4.1	122	0.0283
nzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
ylbenzene	ŀ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
luene		ND	21	ND	ND	ND	ND	ND	8.5	9.7	22	ND	ND	ND	ND	ND	ND	ND	1000
lenes (total)	ľ	ND	ND	ND	ND	ND	ND	ND	ND	ND	7.3	ND	ND	ND	ND	ND	ND	ND	828
tal VOCs		51,000	50,641.0	33,040	48,363.1	52,680	42,506	110,066	35,591.5	31,530.7	25,773.5	14,033.5	49,585.0	58,529.8	21,400	8,064.0	13,025.1	25,124.8	I
tals (mg/L)																			
senic		0.008	0.0106	0.011	0.01	0.006	ND	ND	ND	ND	ND	0.026	ND	0.0051	ND	ND	ND	ND	
rium		0.181	0.139	0.144	0.11	0.04	ND	ND	0.035	0.079	0.04	0.059	0.08	0.055	0.027	0.053	0.027	0.121	_
dmium		ND	ND	271	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
romium	I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0052	ND	ND	ND	ND	ND	ND	-
anide, Total		0.03	0.014	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
ad	i	ND	ND	ND	ND	0.0031	ND	ND	0.042	ND	ND	0.0026	ND	ND	ND	ND	0.15	ND	-
kel	l	ND	0.0106	ND	ND	ND	ND	ND	ND	ND	ND	0.027	ND	0.032	0.0073	0.01	0.013	0.022	-
ю	l	ND	0.0212	0.015	ND	ND	0.023	0.03	ND	ND	ND	0.062	ND	ND	ND	ND	ND	ND	
dmium romium anide, Total ad ckel		ND ND 0.03 ND ND	ND ND 0.014 ND 0.0106	271 ND ND ND ND	ND ND ND ND ND	ND ND ND 0.0031 ND	ND ND ND ND ND	ND ND ND ND ND	ND ND ND <b>0.042</b> ND	ND ND ND ND	ND ND ND ND ND	ND 0.0052 ND 0.0026 0.027	ND ND ND ND	ND ND ND ND 0.032	ND ND ND ND 0.0073	ND ND ND ND 0.01		ND ND ND 0.15 0.013	ND 0.15 ND 0.013 0.022

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

VOCs (mg/L)   Acctone		]	_						Monitorin	g Well MW-	10S (South	east Area)							PRG
Acetone	Parameter	Date Sampled	3/1988	8/1988	7/23/1992	11/8/1995	8/27/1996	1/18/1997	4/21/1998	10/15/1998	4/12/1999	10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001	4/23/2002	10/25/2002	(μg/L)
Bromomethane	VOCs (µg/L)				-					-									
Description   ND   ND   NA   NA	Acetone		ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	3650
2-Butanone	Bromomethane		ND	ND	ND	4.4	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Carbon Disulfide	n-Butylbenzene		ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	
Chloresthane	2-Butanone		ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
1.1-Dichlorocethane	Carbon Disulfide	e	ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	768
1.1-Dichloroethene	Chloroethane		ND	ND	ND	2.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
1.2-Dichloroethane	1,1-Dichloroetha	ane	630	140	91	ND	ND	ND	ND	28	6.3	7.9	ND	5.7	ND	ND	1.9	5.1	973
cis-12-Dichloroethene         NA         NA         NA         NA         NA         37,000         15,000         NA         5,300         3,300         7,900         6.8         3,600         3,400         1,900         118         2,980         5,250         trans-12-Dichloroethene         NA         NA         NA         A440         3550         NA         100         170         200         12,000         170         100         130         6.2         162         148           1.2-Dichloroethene         56,000         26,000         8,700         37,440         15,350         8,140         340         12,006.8         3,770         3,500         2,630         124.2         3,142         3,482         3,988         1,2-Dichloroethene         ND         ND	1,1-Dichloroethe	ene	ND	20	ND	ND	ND	ND	ND	ND	ND	6.8	ND	ND	ND	ND	1.4	2.6	0.0167
trans-1,2-Dichloroethene	1,2-Dichloroetha	але	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Total I.2-Dichloroethene	cis-1,2-Dichloro	ethene	NA	NA	NA	37,000	15,000	NA	5,300	3,300	7,900	6.8	3,600	3,400	1,900	118	2,980	5,250	70
1,2-Dichloropropane	trans-1,2-Dichlo	roethene	NA	NA	NA	440	350	NA	100	170	200	12,000	170	100	130	6.2	162	148	100
Chloroform  ND  ND  ND  ND  ND  ND  ND  ND  ND  N	Total 1,2-Dichlo	proethene	56,000	26,000	8,700	37,440	15,350	8,140	5,400	3,470	8,100	12,006.8	3,770	3,500	2,030	124.2	3,142	5,398	(170)
4-methyl-2-Pentanone ND	1,2-Dichloroprop	pane	ND	ND	ND	6.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.2	1.25
1.1.1-Trichloroethane	Chloroform	•	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
1,1,2-Trichloroethane	4-methyl-2-Penta	anone	ND	ND	ND	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	487
Dibromomethane	1,1,1-Trichloroe	thane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
Tetrachloroethene	1,1,2-Trichloroe	thane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Trichloroethene	Dibromomethan	ie l	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	NĐ	ND	ND	ND	
1,2,4-Trimethylbenzene	Tetrachloroether	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Vinyl Chloride   5,500   2,800   3,100   2,700   650   370   130   1,000   320   700   ND   120   ND   ND   ND   46.6   129   Chloride   ND   7   ND   1.1   ND   ND   ND   ND   ND   ND   ND   N	Trichloroethene		ND	2	ND	5	70	ND	ND	11	ND	ND	ND	ND	ND	ND	3.4	4.3	2.54
Benzene   ND   7   ND   1.1   ND   ND   ND   ND   ND   ND   ND   N	1,2,4-Trimethylb	benzene	ND	ND	NA	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	
Benzene   ND   7   ND   1.1   ND   ND   ND   ND   ND   ND   ND   N	Vinyl Chloride		5,500	2,800	3,100	2,700	650	370	130	1,000	320	700	ND	120	ND	ND	46.6	129	0.0283
Toluene ND 3,500 9,000 270 50 ND	Benzene	ſ	ND		ND	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Xylenes (total)   ND   28   96   21.3   ND   ND   ND   ND   ND   ND   ND   N	Ethylbenzene		ND	4	ND	5.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Total VOCs   62,130   32,501   20,987   40,456.0   16,120   8,510   5,530   4,509   8,426.3   12,721.5   3,770   3,625.7   2,030   124.2   3,195.3   5,540.2	Toluene		ND	3,500	9,000	270	50	ND	ND	ND	ND.	ND	ND	ND	ND	ND	ND	ND	1000
Metals (mg/L)         Arsenic         0.009         ND         ND         0.006         0.002         ND         NA           Barium         0.239         0.0537         0.137         0.04         0.062         ND         0.032         0.023         0.36         0.068         0.033         0.047         0.064         0.061         NA           Cadmium         ND	Xylenes (total)		ND	28	96	21.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Arsenic         0.009         ND         ND         0.006         0.002         ND	Total VOCs		62,130	32,501	20,987	40,456.0	16,120	8,510	5,530	4,509	8,426.3	12,721.5	3,770	3,625.7	2,030	124.2	3,195.3	5,540.2	
Barium         0.239         0.0537         0.137         0.04         0.04         0.062         ND         0.032         0.023         0.36         0.068         0.033         0.047         0.064         0.061         NA           Cadmium         ND	Metals (mg/L)																		
Barium         0.239         0.0537         0.137         0.04         0.04         0.062         ND         0.032         0.023         0.36         0.068         0.033         0.047         0.064         0.061         NA           Cadmium         ND	Arsenic		0.009	ND	ND	0.006	0.002	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	
Chromium         0.017         ND	Barium		0.239	0.0537	0.137	0.04	0.04	0.062		0.032	0.023	0.36	0.068	0.033	0.047	0.064	0.061	NA	
Cyanide, Total         0.006         ND         ND         ND         ND         ND         ND         ND         ND         0.0037         NA           Lead         ND         ND<	Cadmium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	
Lead ND ND ND ND 0.0028 ND NA	Chromium		0.017	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	NA	
	Cyanide, Total		0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0094	ND	0.037	NA	
							0.0028										0.17		
	Nickel						ND					ND					ND	NA	_
Zinc ND 0.0089 ND	Zinc																		

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Due to dry conditions at the site, there was inadequate groundwater volume for analysis of the complete sample set in October 2002; thus samples for submitted for VOC analysis only.

Bold = Analyte detected above the laboratory reporting limit. Shaded = Analyte detected above the corresponding PRG.

-- = No PRG assigned.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

						Monitor	ing Well MW	-11S (Souther	ast Area)					PRG
Parameter	Date Sampled	3/1988	8/1988	7/24/1992	11/8/1995	8/27/1996	1/6/1996	6/13/1997	10/15/1998	10/13/1999	10/2/2000	10/31/2001	10/24/2002	(µg/L)
VOCs (µg/L)				<del></del>										
Acetone	Ţ	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	3650
Bromomethane	•	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
n-Butylbenzene	ľ	ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND	ND	
2-Butanone		ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	_
Carbon Disulfide		ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethan	e	ND	ND	ND	19	5.3	8.3	6.6	ND	5.4	5.7	8.6	5.9	973
1,1-Dichloroethen	e	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroethan	e	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
cis-1,2-Dichloroet	hene	NA	NA	ND	280	150	200	170	160	440	460	669	694	70
trans-1,2-Dichloro	ethene	NA	NA	ND	15	6.5	10	10	ND	ND	12	15.7	8.7	100
Total 1,2-Dichloro	ethene	44	19	ND	295	156.5	210	180	160	440	472	684.7	702.7	(170)
1,2-Dichloropropa	ine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentar	none	ND	ND	ND	NA	NA	NA	NA	NA	ND	ND	ND	ND	487
1.1.1-Trichloroeth	ane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1,1,2-Trichloroeth	ane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane		ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND	ND	
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	ND	ND	4.1	17	3.8	4.3	8	ND	6.2	10.5	4.0	2.54
1,2,4-Trimethylbe	nzene	ND	ND	NA	ND	ND	NA	NA	NA	ND	ND	ND	ND	
Vinyl Chloride	_	4	3	20	18	12	14	18	64	190	160	112	120	0.0283
Benzene	I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	ND	1.5	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs	-· · · <b>1</b>	48	22	20	336.1	192.3	236.1	208.9	232	635.4	643.9	815.8	832.6	
Metals (mg/L)														
Arsenic	Į.	ND	ND	ND	0.001	ND	ND	ND	ND	ND	ND	ND	ND	
Barium		0.418	0.285	0.17	0.11	0.05	ND	ND	0.042	0.082	0.059	0.085	0.122	
Cadmium	ŀ	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total	1	ND	0.04	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Lead	ļ	ND	ND	ND	ND	0.0028	ND	ND	0.015	ND	ND	ND	ND	
Nickel	]	ND	ND	ND	ND	0.03	ND	ND	ND	ND	0.006	ND	ND	_
Zinc		0.026	0.0145	0.122	ND	ND	ND	0.021	ND	0.025	ND	ND	0.052	
			0.01.75	V.1.2.	1,10	112	112			0.020			0.002	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

			Monitoring Well MW	-13S (Southeast Area)		PRG
Parameter	Date Sampled	8/1988	11/1/2001	4/23/2002	10/24/2002	(μg/L)
VOCs (µg/L)						
Acetone		ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	
n-Butylbenzene		ND	ND	ND	ND	
2-Butanone		ND	NA	NA	NA	
Carbon Disulfide		ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	
1,1-Dichloroethane	: I	ND	ND	ND	ND	973
1,1-Dichloroethene	: I	ND	ND	ND	ND	0.0167
1,2-Dichloroethane	: I	ND	ND	ND	ND	
cis-1,2-Dichloroeth	nene	NA	350	200	214	70
trans-1,2-Dichloroe	ethene	NA	11.7	6.4	6.1	100
Total 1,2-Dichloro	ethene	28	361.7	206.4	220.1	(170)
1,2-Dichloropropar	ne	ND	17	8.7	13	1.25
Chloroform		ND	ND	ND	ND	0.274
4-methyl-2-Pentane	one	ND	ND	ND	ND	487
1.1.1-Trichloroetha		ND	ND	ND	ND	200
1,1,2-Trichloroetha	ine	ND	ND	ND	ND	0.314
Dibromomethane		ND	ND	ND	ND	
Tetrachloroethene		ND	ND	ND	ND	1.43
Trichloroethene	1	ND	152	140	181	2.54
1,2,4-Trimethylber	nzene	ND	ND	ND	ND	-
Vinyl Chloride		ND	9.4	12	8.4	0.0283
Benzene		ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	700
Toluene		ND ·	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	828
Total VOCs		28	540.1	367.1	422.5	
Metals (mg/L)						
Arsenic		0.0036	ND	ND	ND	
Barium		0.0705	0.19	0.12	0.218 (J)	
Cadmium		ND	ND	ND	ND	
Chromium		ND	ND	ND	ND	
Cyanide, Total		0.048	NA	NA	NA	
Lead		ND	ND	0.16	ND	
Nickel		0.0167	ND	ND	ND	
Zinc	1	0.0542	ND	ND	0.054 (J)	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

Bold = Analyte detected above the laboratory reporting limit.

ND = Not detected above the method detection limit; NA = not analyzed.

Shaded = Analyte detected above the corresponding PRG.

October 2002 data was validated to Level IV; (J) = estimated.

-- = No PRG assigned.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

		Monitoring Well MW-13D (Southeast Area)	PRG
Parameter	Date Sampled	1/28/2002(1)	(μg/L)
VOCs (µg/L)			
Acetone		ND	3650
Bromomethane		ND	i
n-Butylbenzene		ND	-
2-Butanone		ND	<del></del>
Carbon Disulfide		ND	768
Chloroethane		ND	=
1,1-Dichloroethane		ND	973
1,1-Dichloroethene		ND	0.0167
1,2-Dichloroethane		ND	<del></del>
cis-1,2-Dichloroethene		ND	70
trans-1,2-Dichloroethene	Į	ND	100
Total 1,2-Dichloroethene	1	ND	(170)
1,2-Dichloropropane		ND	1,25
Chloroform		ND	0.274
4-methyl-2-Pentanone		ND	487
1,1,1-Trichloroethane		ND	200
1,1,2-Trichloroethane		ND	0.314
Dibromomethane		ND	
Tetrachloroethene	ſ	ND	1.43
Trichloroethene	1	ND	2.54
1,2,4-Trimethylbenzene		ND	<b></b>
Vinyl Chloride		ND	0.0283
Benzene		ND	0.617
Ethylbenzene		ND	700
Toluene		ND	1000
Xylenes (total)		ND	828
Total VOCs	· · · · · · · · · · · · · · · · · · ·	ND	<b></b>
Metals (mg/L)			
Arsenic		< 0.005	<b></b>
Barium	- 1	0.10	-
Cadmium	1	<0.03	
Chromium	1	<0.04	<del>-</del>
Cyanide, Total		NA	<b>-</b>
Lead		<0.08	
Nickel		<0.02	<b>-</b>
Zinc		<0.05	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

(1) Data suspect due to well integrity.

Bold = Analyte detected above the laboratory reporting limit.

-- = No PRG assigned.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

			<del></del>				Monitor	ing Well M	W/ 145 (Ab	oversund	Storage Tan	k Aran)						PRG
Parameter	Date Sampled	8/1988	7/23/1992	11/7/1995	8/27/1996	6/11/1997				• • • • • • • • • • • • • • • • • • • •	10/14/1999		10/2/2000	4/19/2001	10/30/2001	4/23/2002	10/23/2002	(μg/L)
VOCs (µg/L)																		
Acetone		ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
n-Butylbenzene		ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	_
2-Butanone		ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	-
Carbon Disulfid	le	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	768
Chloroethane	ſ	ND	ND	5.4	22	6.6	6.6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	<b>-</b>
1,1-Dichloroeth	ane	270	86	320	260	150	160	74	63	19	21	12	13	5.7	7.4	8.4	10.2	973
1,1-Dichloroeth	ene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroeth	ane	ND	ND	1.1	1.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloro	ethene	NA	NA	45	20	3.9	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	70
trans-1,2-Dichlo	proethene	NA	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	100
Total 1,2-Dichle	oroethene	650	71	45	20	3.9	2.3	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	(170)
1,2-Dichloropro	pane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform	·	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pent	tanone	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	487
1,1,1-Trichloroe	ethane	ND	5	10	9.1	4.9	2.6	ND	ND	5.2	ND	ND	ND	14	15.1	4.7	2.0	200
1,1,2-Trichloroe	ethane	6	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethan	ne [	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	-
Tetrachloroethe	ene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene	:	ND	ND	5.5	10	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethyl	benzene	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	
Vinyl Chloride	ŀ	140	47	15	5.4	1.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	4.1	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	1.2	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs		1,066	209	402.0	329.0	166.5	171.5	74	63	24.2	21	12	13	19.7	22.5	13.1	16.3	
Metals (mg/L)				_		_												
Arsenic	· · · · · · · · · · · · · · · · · · ·	0.0054	0.0077	0.014	0.004	ND	ND	ND	ND	ND	0.0079	ND	0.021	ND	ND	ND	ND	
Barium		0.0891	0.062	0.05	0.05	0.066	0.069	0.066	0.084	0.056	0.1	0.095	0.11	0.07	0.065	0.089	0.13	-
Cadmium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total		0.035	0.006	ND	ND	ND	ND	0.0078	ND	0.017	ND	ND	0.009	ND	0.014	ND	ND	
Lead		ND	ND	ND	0.0065	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.17	ND	-
Nickel		ND	ND	ND	0.02	0.027	0.026	0.022	ND	ND	ND	ND	0.009	0.016	0.01	0.011	0.012	
Zinc	ļ	0.0035	0.021	ND	ND	0.026	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

			Mo	nitoring Well MW	-15S (Abovegroun	d Storage Tank Ar	·ea)	1	PRG
Parameter	Date Sampled	8/6/1992	11/29/1995	6/12/1997	10/14/1999	10/2/2000	10/30/2001	10/23/2002	(μ <b>g</b> /L)
VOCs (µg/L)		-			•				
Acetone		ND	NA	NA	ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene		NA	ND	ND	ND	ND	ND	ND	
2-Butanone		ND	NA	NA	NA	NA	NA	NA	
Carbon Disulfide		ND	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane		6	5.8	4.9	ND	ND	1.5	ND	973
1,1-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	0.0167
1.2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloroethene	ŀ	10	13	41	NA	ND	32.9	5.9	70
trans-1,2-Dichloroethene		ND	ND	2.5	NA	ND	2.3	ND	100
Total 1,2-Dichloroethene		10	13	43.5	ND	ND	35.2	5.9	(170)
1,2-Dichloropropane		ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentanone		ND	NA	NA	ND	ND	ND	ND	487
1.1.1-Trichloroethane	ı	ND	ND	ND	ND	ND	ND	ND	200
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane		NA	ND	ND	ND	ND	ND	ND	
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	ND	65	5.8	11	145	13.9	2.54
1,2,4-Trimethylbenzene	į.	NA	ND	ND	ND	ND	ND	ND	_
Vinyl Chloride		ND	28	2.3	ND	ND	ND	ND	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	700
Toluene	i i	ND	1.1	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	828
Total VOCs		16	47.9	115.7	5.8	11	181.7	19.8	
Metals (mg/L)									
Arsenic		0.0196	ND	ND	0.0059	ND	ND	ND	
Barium		0.219	0.14	0.053	0.086	0.097	0.09	0.106	
Cadmium		0.015	ND	ND	ND	ND	ND	ND	
Chromium		ND	0.011	ND	ND	ND	ND	ND	
Cyanide, Total		ND	ND	ND	ND	ND	ND	ND	
Lead		ND	ND	0.0038	ND	ND	ND	ND	
Nickel		ND	ND	ND	ND	0.007	ND	ND	-
Zinc	1	0.047	ND	0.055	ND	ND	ND	ND	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

	1		Moni	toring Well MW-	16S (Abovegrou	und Storage Tan	k Area)			PRG
Parameter Date Sam	pled 8/6/19	992 11/7/1995	11/6/1996	6/11/1997	10/15/1998	10/14/1999	10/2/2000	11/1/2001	10/23/2002	(μ <b>g</b> /L)
VOCs (µg/L)		<u> </u>								
Acetone	NE	NA NA	NA	NA	NA	ND	ND	ND	ND	3650
Bromomethane	ND	) ND	ND	ND	ND	ND	ND	ND	ND	-
n-Butylbenzene	NA	ND ND	NA	NA	NA	ND	ND	ND	ND	
2-Butanone	NE	) NA	NA	NA	NA	NA	NA	NA	NA	-
Carbon Disulfide	ND	) NA	NA	NA	NA	ND	ND	ND	ND	768
Chloroethane	ND	) ND	NA	ND	ND	ND	ND	ND	ND	
1,1-Dichloroethane	55	85	26	58	37	38	ND	6.1	30.3	973
1,1-Dichloroethene	ND	ND ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroethane	NE	1.4	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloroethene	NA	190	50	75	NA	93	93	18.5	87.4	70
trans-1,2-Dichloroethene	N A	ND ND	1.3	5.3	NA	NA	ND	ND	2.5	100
Total 1,2-Dichloroethene	41	190	51.3	80.3	130	93	93	18.5	89.9	(170)
1,2-Dichloropropane	NE	ND ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform	NE	) ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentanone	NE	) NA	NA	NA	NA	ND	ND	ND	ND	487
1,1,1-Trichloroethane	8	2.7	1	2.9	ND	6.9	ND	1.4	10.2	200
1,1,2-Trichloroethane	NE	) ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane	NA	ND ND	NA	NA	NA	ND	ND	ND	ND	
Tetrachloroethene	NE	) ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene	NE	6.9	ND	ND	47	ND	ND	1.0	ND	2.54
1,2,4-Trimethylbenzene	N.A	ND ND	NA	NA	NA	ND	ND	ND	ND	
Vinyl Chloride	100	41	19	16	37	15	ND	ND	15.6	0.0283
Benzene	NE	ND ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene	NE	) ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene	ND	ND ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)	ND	) ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs	204	327.0	97.3	157.2	251	152.9	93	27.0	146.0	
Metals (mg/L)		•							<del></del>	
Arsenic	0.00	25 0.003	ND	ND	ND	ND	0.021	ND	ND	-
Barium	0.0	5 0.06	0.065	ND	0.054	0.059	0.11	0.034	0.146	
Cadmium	NE	) ND	ND	0.00024	ND	ND	ND	ND	ND	
Chromium	NE	) ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total	NE	) ND	ND	0.011	ND	ND	0.009	ND	ND	
Lead	NE	) ND	ND	ND	ND	ND	ND	ND	ND	[ - [
Nickel	NE	) ND	ND	ND	ND	ND	0.009	ND	ND	
Zinc	0.03	8 ND	ND	0.028	ND	ND	ND	ND	0.06	-

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter ( $\mu g/L$ ). Metals reported in milligrams per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

	Monitoring Well MW-18S (Abo	veground Storage Tank Area)	PRG
Parameter Date Samples		11/1/2001	(μg/L)
VOCs (µg/L)	-		
Acetone	ND	ND	3650
Bromomethane	ND	ND	
n-Butylbenzene	ND	ND	_
2-Butanone	NA	NA	
Carbon Disulfide	ND	ND	768
Chloroethane	ND	ND	-
1,1-Dichloroethane	ND	ND	973
1,1-Dichloroethene	ND	ND	0.0167
1,2-Dichloroethane	ND	ND	
cis-1,2-Dichloroethene	ND	ND	70
trans-1,2-Dichloroethene	ND	ND	100
Total 1,2-Dichloroethene	ND	ND	(170)
1,2-Dichloropropane	ND	ND	1.25
Chloroform	ND	ND	0.274
4-methyl-2-Pentanone	ND	ND	487
1,1,1-Trichloroethane	ND	ND	200
1,1,2-Trichloroethane	ND	ND	0.314
Dibromomethane	ND	ND	
Tetrachloroethene	ND	ND	1.43
Trichloroethene	ND	ND	2.54
1,2,4-Trimethylbenzene	ND	ND	
Vinyl Chloride	ND	1.6	0.0283
Benzene	ND	ND	0.617
Ethylbenzene	ND	ND	700
Toluene	ND	ND	1000
Xylenes (total)	ND	ND	828
Total VOCs	ND	1.6	
Metals (mg/L)			
Arsenic	ND	ND	
Barium	0.177	0.084	
Cadmium	ND	ND	
Chromium	ND	ND	-
Cyanide, Total	NA	NA	_
Lead	ND	ND	
Nickel	ND	ND	-
Zinc	5.56	0.2	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

(1) August 1992 data from Technical Memorandum (Warzyn, November 1992).

Bold = Analyte detected above the laboratory reporting limit.

Shaded = Analyte detected above the corresponding PRG.

-- = No PRG assigned.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

								Moni	toring Wall	MW_834C	(Southeast	A ===2)							PRG
Parameter	Date Sampled	3/1988(1)	8/1988(1)	7/23/1992	11/8/1995	8/27/1996	6/13/1997	11/18/1997		10/15/98		10/13/1999	5/4/2000	10/2/2000	4/19/2001	10/31/2001	4/23/2002	10/24/2002	
VOCs (µg/L)				-													_		<del>- '' - '</del>
Acetone		ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_						
n-Butylbenzene		ND	ND	NA	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
2-Butanone		ND	ND	ND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	l -
Carbon Disulfid	le l	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	768
Chloroethane	.•	ND	ND	ND	ND	ND	5.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
1,1-Dichloroeth	ane	ND	ND	ND	48	72	51	56	ND	42	39	43	38	26	ND	31	29.1	33.3	973
1,1-Dichloroeth		ND	ND	ND	ND	ND	4.1	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroeth		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND							
cis-1,2-Dichloro		ND	ND	NA	15,000	15,000	11,000	NA	5,200	1,300	4,000	3,400	2,200	1,500	750	1,730	1,190	1,190	70
trans-1,2,-Dichle		ND	ND	NA	68	110	56	NA	ND	32	21	17	14	5.9	ND	21	12.6	2.3	100
Total 1,2-Dichlo		ND	ND	12,000	15,068	15,110	11,056	8,700	5,200	1,332	4,021	3,417	2.214	1.505.9	750	1,751	1,202.6	1,192	(170)
1,2-Dichloropro		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25						
Chloroform	-	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274						
4-methyl-2-Pent	tanone	ND	ND	ND	NA	NA	NA	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	487
1,1,1-Trichloroe		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200						
1,1,2-Trichloroe	ethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314						
Dibromomethan	ne	ND	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	
Tetrachloroether	пе	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43						
Trichloroethene	:	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54						
1,2,4-Trimethyll	benzene	ND	ND	NA	ND	ND	ND	NA	ND	NA	ND	ND	ND	ND	ND	ND	ND	ND	-
Vinyl Chloride		110	140	1,200	1,700	1,600	1,400	1,400	900	610	990	830	550	380	220	399	387	447	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617						
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700						
Toluene		ND	0.7	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828						
Total VOCs		110	140.7	13,200	16,816	16,782	12,516.2	10,156	6,100	1,984	5,050	4,290	2,802	1,911.9	970	2,181	1,618.7	1,672.6	-
Metals (mg/L)																			
Arsenic		ND	ND	ND	0.003	ND	0.0022	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Barium		0.186	0.117	0.111	0.18	0.09	ND	ND	0.048	0.055	0.088	0.09	0.094	0.068	0.063	0.17	0.068	0.16	-
Cadmium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	]						
Chromium		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND							
Cyanide, Total		ND	0.022	0.006	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
Lead		ND	ND	ND	ND	0.011	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.18	ND	_
Nickel		ND	ND	ND	ND	ND	ND	0.002	ND	ND	ND	ND	1 -						
Zinc		ND	0.0054	ND	ND	ND	0.041	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.063	1 -

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Bold = Analyte detected above the laboratory reporting limit. Shaded = Analyte detected above the corresponding PRG.

~ = No PRG assigned.

<sup>(1)</sup> Possible mislabeling of sample occurred in 1988.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

	J	Monitoring Well MW-83AD (Southeast Area)									PRG		
Parameter	Date Sampled	3/1988	8/1988	7/31/1992	11/8/1995	11/6/1996	6/13/1997	10/15/1998	10/13/1999	10/2/2000	10/31/2001	10/24/2002	(μg/L)
VOCs (µg/L)									_				
Acetone		ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	-
n-Butylbenzene		ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	-
2-Butanone		ND	ND	ND	NA	NA	NA	NA	NA	NA	ND	ND	
Carbon Disulfide	e	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	ND	NA	ND	ND	ND	ND	ND	ND	-
1,1-Dichloroetha	ine	ND	ND	0.6	ND	1.5	ND	ND	ND	ND	ND	ND	973
1,1-Dichloroethe	ene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroetha	ine	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloro	ethene	ND	NA	NA	140	88	60	38	33	8.9	9.3	3.5	70
trans-1,2-Dichlor	rothene	ND	NA	NA	ND	ND	ND	ND	ND	NA	ND	ND	100
Total 1,2-Dichlor	roethene	ND	7.2	10	140	88	60	38	33	8.9	9.3	3.5	(170)
1,2-Dichloroprop		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Penta	anone	ND	ND	ND	NA	NA	NA	NA	ND	ND	ND	ND	487
1,1,1-Trichloroet		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1.1.2-Trichloroet		ND	ND	ND	ND	ND	ND	ND	13	ND	ND	ND	0.314
Dibromomethane	e	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	
Tetrachloroethen	ne I	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethylb	enzene	ND	ND	NA	ND	NA	NA	NA	ND	ND	ND	ND	
Vinyl Chloride	ľ	4	38	3	110	73	54	8.8	35	16	3.9	5.8	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	0.9	ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs	Ī	4	46.1	13.6	250	163	114	46.8	81	24.9	13.2	9.3	
Metals (mg/L)													
Arsenic	i	NA	NA	ND	0.004	ND	ND	ND	ND	ND	ND	ND	
Barium	i	NA	NA	0.022	0.25	0.24	0.27	0.17	0.19	0.17	0.16	0.288	
Cadmium		NA	NA	0.005	ND	ND	ND	ND	ND	ND	ND	ND	
Chromium	i	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	_
Cyanide, Total	4	NA	NA	0.07	ND	ND	0.014	ND	ND	ND	ND	ND	-
Lead	1	NA	NA	ND	ND	ND	ND	ND	ND	ND	ND	ND	
Nickel		NA	NA	ND	ND	ND	ND	ND	ND	0.004	ND	ND	_
Zinc		NA	NA	ND	0.01	ND	0.02	0.022	0.02	ND	0.069	0.057	_

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (µg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

				-	Monitoring W	ell MW-83B (N	ortheast Area)				PRG
Parameter	Date Sampled	3/1988	7/31/1992	6/7/1996	11/6/1996	6/12/1997	10/15/1998	10/2/2000	10/31/2001	10/23/2002	(μg/L)
VOCs (µg/L)											
Acetone		270	ND	ND	NA	NA	ND	ND	ND	ND	3650
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	
n-Butylbenzene		ND	NA	ND	NA	NA	ND	ND	ND	ND	
2-Butanone		23	ND	ND	NA	NA	NA	NA	NA	NA	
Carbon Disulfide		ND	NA	ND	NA	NA	ND	ND	ND	ND	768
Chloroethane		ND	ND	ND	NA	ND	ND	ND	ND	ND	••
1,1-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	973
1,1-Dichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0167
1,2-Dichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	
cis-1,2-Dichloroethene	:	ND	ND	ND	ND	ND	ND	ND	ND	ND	70
trans-1,2-Dichlorothen	e	ND	NA	ND	ND	ND	ND	ND	ND	ND	100
Total 1,2-Dichloroethe	ne	ND	ND	ND	ND	ND	ND	ND	ND	ND	(170)
1,2-Dichloropropane		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.25
Chloroform		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.274
4-methyl-2-Pentanone		ND	ND	ND	NA	NA	ND	ND	ND	ND	487
1,1,1-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	200
1,1,2-Trichloroethane		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.314
Dibromomethane		ND	NA	ND	NA	NA	ND	ND	ND	ND	
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	1.43
Trichloroethene		ND	ND	ND	ND	ND	ND	ND	ND	ND	2.54
1,2,4-Trimethylbenzer	ie	ND	NA	ND	NA	NA	ND	ND	ND	ND	
Vinyl Chloride		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.0283
Benzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	0.617
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND	ND	700
Toluene		ND	ND	ND	ND	ND	ND	ND	ND	ND	1000
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND	ND	ND	828
Total VOCs		293	ND	ND	ND	ND	ND	ND	ND	ND	
Metals (mg/L)	-										
Arsenic		ND	ND	0.003	0.0031	0.0027	ND	0.0054	ND	ND	
Barium		ND	ND	0.16	0.22	0.19	0.16	0.26	0.18	0.227	
Cadmium		ND	0.005	ND	ND	ND	ND	ND	ND	ND	
Chromium		ND	ND	ND	ND	ND	ND	ND	ND	ND	
Cyanide, Total		ND	0.019	ND	ND	ND	ND	ND	ND	ND	_
Lead		ND	ND	ND	ND	ND	ND	ND	ND	ND	
Nickel		ND	ND	0.02	0.021	ND	ND	ND	ND	ND	-
Zinc		ND	ND	0.1	0.081	0.029	ND	ND	ND	ND	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total. Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L). Metals reported in milligrams per liter (µg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Bold = Analyte detected above the laboratory reporting limit. -- = No PRG assigned.

Table 3 Monitoring Well Analytical Results Wayne Reclamation and Recycling Columbia City, Indiana

		Monitoring Well MW-83DS (Fo	rmerly GW-83E; Southeast A	Area)	PRG
Parameter Date S	ampled 8/1988	11/1/2001	4/23/2002	10/24/2002	(μ <b>g</b> /L)
VOCs (µg/L)			<u> </u>		<u> </u>
Acetone	ND	ND	ND	ND	3650
Bromomethane	ND	ND	ND	ND	
n-Butylbenzene	ND	ND	ND	ND	
2-Butanone	ND	NA	NA	NA	
Carbon Disulfide	ND	ND	ND	ND	768
Chloroethane	ND	ND	ND	ND	
1,1-Dichloroethane	ND	1.1	ND	ND	973
1,1-Dichloroethene	ND	ND	ND	ND	0.0167
1,2-Dichloroethane	ND	ND	ND	ND	
cis-1,2-Dichloroethene	ND	191	350	320	70
trans-1,2-Dichloroethene	ND	1.1	ND	ND	100
Total 1,2-Dichloroethene	ND	192	350	320	(170)
1,2-Dichloropropane	ND	ND	ND	1.0	1.25
Chloroform	ND	ND	ND	ND	0.274
4-methyl-2-Pentanone	ND	ND	ND	ND	487
1,1,1-Trichloroethane	ND	ND	ND	ND	200
1,1,2-Trichloroethane	ND	ND	ND	ND	0.314
Dibromomethane	ND	ND	ND	ND	-
Tetrachloroethene	ND	ND	ND	ND	1.43
Trichloroethene	ND	ND	ND	ND	2.54
1,2,4-Trimethylbenzene	ND	ND	ND	ND	
Vinyl Chloride	ND	16	120	188	0.0283
Benzene	ND	ND	ND	ND	0.617
Ethylbenzene	ND	ND	ND	ND	700
Toluene	ND	ND	ND	ND	1000
Xylenes (total)	ND	ND	ND	ND	828
Total VOCs	ND	209.2	470	509	1
Metals (mg/L)					
Arsenic	0.003	ND	ND	ND	
Barium	0.211	0.077	0.12	0.153	
Cadmium	ND	ND	ND	ND	_
Chromium	ND	ND	ND	ND	_
Cyanide, Total	ND	NA	NA	NA	
Lead	ND	ND	0.16	ND	
Nickel	ND	ND	ND	ND	
Zinc	ND	0.062	ND	ND	

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

ND = Not detected above the method detection limit; NA = not analyzed.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 3
Monitoring Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

		Monitoring Well MW-83DD (Fo	rmerly GW-83D; Southeast Area)	PRG
Parameter	Date Sampled	8/1988	11/6/2001	(μg/L)
VOCs (µg/L)				• • • • • • • • • • • • • • • • • • • •
Acetone		ND	ND	3650
Bromomethane		ND	ND	<del>-</del>
n-Butylbenzene		ND	ND	
2-Butanone		ND	NA	<del></del>
Carbon Disulfide		ND	ND	768
Chloroethane		ND	ND	
1,1-Dichloroethane		ND	ND	973
1,1-Dichloroethene		ND	ND	0.0167
1,2-Dichloroethane		ND	ND	
cis-1,2-Dichloroethene		ND	ND	70
trans-1,2-Dichloroethene		ND	ND	100
Total 1,2-Dichloroethene		ND	ND	(170)
1,2-Dichloropropane		ND	ND	1.25
Chloroform	]	ND	ND	0.274
4-methyl-2-Pentanone		ND	ND	487
1,1,1-Trichloroethane		ND	ND	200
1,1,2-Trichloroethane		ND	ND	0.314
Dibromomethane		ND	ND	-
Tetrachloroethene		ND	ND	1.43
Trichloroethene		ND	ND	2.54
1,2,4-Trimethylbenzene		ND	ND	
Vinyl Chloride		ND	ND	0.0283
Benzene		ND	ND	0.617
Ethylbenzene		ND	ND	700
Toluene		ND	ND	1000
Xylenes (total)		ND	ND	828
Total VOCs		ND	ND	
Metals (mg/L)				
Arsenic		0.057	ND	
Barium	j	0.009	0.05	
Cadmium		ND	ND	
Chromium		ND	ND	
Cyanide, Total	1	0.022	NA	
Lead	Ì	0.0023	ND	_
Nickel		ND	ND	_
Zinc		0.004	ND	_

In samples where total 1,2-dichloroethene has been listed, cis-1.2-dichloroethene is included in that total.

Volatile organic compounds (VOCs) and Preliminary Remediation Goals (PRGs) reported in micrograms per liter (µg/L).

Metals reported in milligrams per liter (mg/L).

Bold = Analyte detected above the laboratory reporting limit.

ND = Not detected above the method detection limit; NA = not analyzed.

-- = No PRG assigned.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

		Recovery Well RW-1									
Parameter	Date Sampled	8/27/1996	11/6/1996	6/11/1997	11/18/1997	4/21/1998	11/1/2001	10/25/2002			
VOCs (µg/L)								-			
Acetone		NA	NA	NA	NA	ND	ND -	ND .			
Bromomethane		ND	ND	ND	ND	ND	ND	ND			
n-Butylbenzene		ND	NA	NA	NA	ND	ND	ND			
2-Butanone		NA	NA	NA	NA	NA	NA	ND			
Carbon Disulfide		NA	NA	NA	NA	ND	ND	ND			
Chloroethane		ND	2.4	2.2	3.7	ND	ND	ND			
1,1-Dichloroethane		170	180	110	190	140	103	11			
1,1-Dichloroethene	j	ND	ND	ND	ND	ND	ND	ND			
1,2-Dichloroethane		ND	ND .	ND	ND	ND	ND	ND			
cis-1,2-Dichloroeth	ene	240	180	190	230	200	119	1,100			
trans-1,2-Dichloroe	thene	ND	1.4	1.4	2.9	ND	1.3	13			
Total 1,2-Dichloroe	thene	240	181.4	191.4	232.9	200	120.3	1,113			
1,2-Dichloropropan	e	ND	ND	ND	ND	'ND	ND	ND			
Chloroform		ND	ND	ND	ND	ND	ND	ND			
4-methyl-2-Pentano	ne	NA	NA	NA	NA	- ND	ND	ND ·			
1,1,1-Trichloroetha	ne	22	23	20	31	19	12.7	12.7			
1,1,2-Trichloroetha	ne	ND	ND	ND	ND	ND	ND	ND			
Dibromomethane		ND	NA	NA	NA	ND	ND	ND			
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND			
Trichloroethene		ND	ND	ND	ND	ND	2.4	240			
1,2,4-Trimethylben	zene	NA	NA	NA	NA	ND	ND	ND			
Vinyl Chloride		170	ND	100	140	80	54.8	60			
Benzene		ND	ND	ND	ND	ND	ND	ND			
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND			
Toluene	j	ND	ND	ND	ND	ND	ND	ND			
Xylenes (total)	J	ND	ND	ND	ND	ND	ND	ND			

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L)

NA = Not analyzed.

ND = Not detected above the method detection limit.

No data was collected during the October 1998 sampling event.

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

				Re	covery Well RV	V-2		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/11/1997	11/ <u>18/</u> 1997	4/21/1998	11/1/2001	10/25/2002
VOCs (µg/L)								
Acetone		NA	NA	NA	NA	ND	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA	ND
Carbon Disulfide		NA	NA	NA	NA	ND	ND	ND
Chloroethane		ND	2.6	2.2	ND	ND	ND	ND
1,1-Dichloroethan	e	8.1	160	110	21	52	18.2	19
1,1-Dichloroethen	e	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethan	e	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroet	hene	6.6	150	180	53	78	45	55
trans-1,2-Dichloro	ethene	ND	1.6	1.4	ND	ND	1.7	ND
Total 1,2-Dichloro	ethene	6.6	151.6	181.4	53	78	46.7	55
1,2-Dichloropropa	ine	ND	ND	ND	ND	ND	ND	ND
Chloroform		ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentar	none	NA	NA	NA	NA	ND	ND	ND
1,1,1-Trichloroeth	ane	ND	23.0	20.0	ND	6.1	4.4	ND
1,1,2-Trichloroeth	ane	ND	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND	ND
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND
Trichloroethene		ND	ND	ND	ND	ND	1.2	ND
1,2,4-Trimethylbe	nzene	NA	NA	NA	NA	ND	ND	ND
Vinyl Chloride		7.7	150	97	19	34	5.3	10
Benzene		ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	J	ND	ND -	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND -
Xylenes (total)		ND	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L)

NA = Not analyzed.

ND = Not detected above the method detection limit.

No data was collected during the October 1998 sampling event

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

					Recovery V	Well RW-3	_		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	8/18/1999	10/19/1999	11/1/2001
VOCs (µg/L)				· <del></del>					
Acetone		NA	NA	NA	NA	ND	ND	ND	ŊD
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND	ND	ND
2-Butanone		NA	NA	NA	NA	NA	ND	NA	NA
Carbon Disulfide	e	NA	NA	NA	NA	ND	ND	ND	. ND
Chloroethane	[	ND	NA	ND	ND	ND	ND	ND	ND
1,1-Dichloroetha	ane	ND	3.1	2.7	4.9	ND	ND	ND	9.4
1,1-Dichloroethe	ene	ND	ND	ND	1.9	ND	ND	ND	ND
1,2-Dichloroetha	ane	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloro	ethene	390	330	270	690	340	150	200	349
trans-1,2-Dichlo	roethene	10	5.9	6.9	15	11	ND	5.1	8.6
Total 1,2-Dichlo	proethene	400	335.9	276.9	705	351	150	205	357.6
1,2-Dichloropro	pane	ND	ND	ND	ND	, ND	ND	ND	ND
Chloroform	ľ	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pent	anone	NA	NA	NA	NA	ND .	ND	ND	, ND
1,1,1-Trichloroe	thane	ND	ND	ND	1.7	ND	ND	ND	4.4
1,1,2-Trichloroe	thane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethan	e	ND	NA	NA	NA	ND	ND	ND	ND
Tetrachloroethe <mark>r</mark>	ne	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene		150	130	120	240	330	96	140	99.1
1,2,4-Trimethylb	benzene	NA	NA	NA	NA	ND	ND	ND	ND
Vinyl Chloride	Į	43	40	28	50	3.5	11.0	15.0	30.4
Benzene	İ	ND	ND	ND	ND	ND	ND	ND	ND
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	ł	ND	ND	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

			-	Re	covery Well RV	V-4		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998_	11/2/2001	4/23/2002
VOCs (µg/L)				-				
Acetone	ł	NA	NA	NA	NA	ND	ND _	ND
Bromomethane	i	ND	ND	ND-	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND	ND
2-Butanone		NA	NA	NA	ŇA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND	ND
Chloroethane		ND	NA	ND	ND	ND	ND	ND
1,1-Dichloroethan	c	ND	2.9	1.5	2.6	ND	13.3	1.2
1,1-Dichloroethen	e l	ND	ND	ND	ND	ND	2.3	ND
1,2-Dichloroethan	e	ND	ND	. ND	ND	ND	ND	ND
cis-1,2-Dichloroet	hene	430	450	290	390	180	1,580	147
trans-1,2-Dichlore	ethene	27	26	. 18 <sup>-</sup>	24	12	23.2	16.4
Total 1,2-Dichlore	ethene	457	476	308	414	192	1603	-163
1,2-Dichloropropa	ne	ND	ND	ND	ND	ND	ND	ND
Chloroform		ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentar	ione	NA	NA	NA	NA ·	ND	ND	ND
1.1.1-Trichloroeth	ane	ND	ND	ND	- ND	ND	ND	ND
1,1,2-Trichloroeth	ane	ND	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND .	ND
Tetrachloroethene		ND	ND	ND	ND	ND	ND	ND T
Trichloroethene	ł	ND	ND	ND	ND	ND	258	ND
1,2,4-Trimethylbe	nzene	NA	NA	NA	NA	ND	ND	ND
Vinyl Chloride		ND	ND	ND	ND	ND	142	ND
Benzene		ND	ND	ND	ND	ND	ND	ND
Ethylbenzene	ľ	ND	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	J	ND	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

					Recovery V	Well RW-5			
<u>Parameter</u>	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001	4/23/2002	10/25/2002
VOCs (μg/L)								-	
Acetone		NA	NA	NA	NA	ND	ND	ND	ŊD
Bromomethane		ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND	ND	ND
2-Butanone	ļ	NA	NA	NA	NA	NA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND	ND	ND
Chloroethane		ND	NA	ND	ND	ND	ND	ND	ND
1.1-Dichloroethar	ne	ND	ND	1.1	4.0	ND	7.1	4.7	5.7
1,1-Dichloroether	ne	ND	ND	ND	ND	ND	2.9	2.2	5.2
1,2-Dichloroethau	ne	ND	ND	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroe	thene	330	330	910	1,900	4,000	5,310	3,520	5,500
trans-1,2-Dichlor	oethene	20	26	53	140	260	211	143	96
Total 1,2-Dichlor	oethene	350	356	963	2,040	4,260	5,521	3,663	5,596
1,2-Dichloroprop	ane	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	l	ND	ND	ND	ND	ND	ND	ND	ND
4-methyl-2-Penta	none	NA	NA	NA	NA	ND	ND	ND	ND
1,1,1-Trichloroetl	hane	ND	ND	ND	ND	ND	4.0	3.1	ND
1,1,2-Trichloroetl	hane	ND	ND	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND	ND	ND
Tetrachloroethene	e	ND	ND	ND	ND	ND	ND	ND	ND
Trichloroethene		ND	1.8	ND	15	130	348	219	55
1,2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND	ND	ND
Vinyl Chloride		100	200	520	1,600	1,100	393	436	600
Benzene		ND	ND	ND	ND	ND	4.0	3.8	5.6
Ethylbenzene		ND	ND	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND	ND	ND
Xylenes (total)	J	ND	ND	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L)

NA = Not analyzed.

ND = Not detected above the method detection limit.

No data was collected during the October 1998 sampling event

October 2002 data was validated to Level IV; no flags were required for the data in this table collected on that date.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

				Recovery V	Well RW-6		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/97	4/21/1998	11/2/2001
VOCs (µg/L)							
Acetone		NA	NA	NA	NA	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND
Chloroethane		ND	NA	7.5	ND	ND	ND
1,1-Dichloroethar	ne	ND	ND	21	ND	ND	ND
1,1-Dichloroether	ne	ND	ND	3.6	ND	ND	ND
1,2-Dichloroethar	ne	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroe	thene	ND	ND	4,500	1.0	5.7	43.1
trans-1,2-Dichlore	ethene	ND	ND	53	ND	ND	ND
Total 1,2-Dichlore	oethene	ND	ND	4,553	1.0	5.7	43.1
1,2-Dichloropropa	ane	ND	ND	ND	ND	ND	ND
Chloroform	İ	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentar	none	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroeth	nane	ND	ND	3.1	ND	ND	ND
1,1,2-Trichloroeth	nane	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND
Tetrachloroethene	:	ND	ND	ND	ND	ND	ND
Trichloroethene		ND	ND	240	ND	ND	ND
1,2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	1	ND	ND	780	1.1	ND	112
Benzene		ND	ND	ND	ND	ND	ND
Ethylbenzene		ND	ND	ND	ND	ND	ND
Toluene	ł	ND	ND	ND	ND	ND	ND
Xylenes (total)		ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter ( $\mu g/L$ ).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

				Recovery	Well RW-7		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
VOCs (µg/L)				-			
Acetone		NA	NA	NA	NA	ND	ND
Bromomethane		ND	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND
Chloroethane		ND	NA	ND	ND	ND	ND
1,1-Dichloroethar	ne	ND	ND	ND	ND	ND	1.7
1,1-Dichloroether	ne	ND	ND	ND	ND	ND	1.1
1,2-Dichloroethar	ne	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroe	thene	2.4	910	100	520	ND	653
trans-1,2-Dichlore	oethene	ND	43	2.2	12	ND	7.1
Total 1,2-Dichlor	oethene	2.4	953	102.2	532.0	ND	660.1
1,2-Dichloropropa	ane	ND	7.4	ND	2.4	ND	ND
Chloroform		ND	ND	ND	ND	ND	ND
4-methyl-2-Penta	none	NA	NA	NA	NA	ND	ND
1,1,1-Trichloroeth	nane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroeth	nane	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND
Tetrachloroethene	:	ND	1.0	ND	ND	ND	ND
Trichloroethene		1.7	290	26	140	43	101
1,2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride		ND	ND	ND	7.9	3.3	174
Benzene		ND	ND	ND	ND	ND	ND
Ethylbenzene	ĺ	ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND
Xylenes (total)		ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

-		<del></del> -		Recovery	Well RW-8		· —
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998_	11/2/2001
VOCs (µg/L)							-
Acetone		NA	NA	NA	NA	ND	. ND
Bromomethane		ND	ND	- ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND
Chloroethane		ND	NA	3.6	2.1	ND	ND
1,1-Dichloroethan	ie	ND	11	19	29	ND	110
1,1-Dichloroether	ie	ND	3.1	5.6	5.8	ND	30.6
1,2-Dichloroethan	ie	ND	1400	ND	ND	ND	ND
cis-1.2-Dichloroet	thene	3,000	1,434	2,800	4,700	5,500	18,500
trans-1,2-Dichlore	ethene	66	ND	42	44	ND	144
Total 1,2-Dichlore	pethene	3066	1434	2842	4744	5500	18,644 -
1,2-Dichloropropa	ane	ND	ND	ND	ND -	ND	ND
Chloroform		ND	ND	ND	ND	ND	ND
4-methyl-2-Pentai	none	NA	NA	NA	NA .	ND	ND
1,1,1-Trichloroeth	iane	ND	ND	ND ·	ND	ND	ND
1,1,2-Trichloroeth	ane	ND	ND	ND	ND	ND	ND
Dibromomethane		ND	NA	NA	NA	ND	ND
Tetrachloroethene	:	ND	ND	ND	ND	ND	ND
Trichloroethene	J	140	98	160	180	270	5,250
1.2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride		650	130	310	160	ND	802
Benzene		ND	ND	ND	ND	ND	ND
Ethylbenzene		ND	ND	ND	ND	ND	ND
Toluene	1	ND	ND	ND	ND	ND	ND
Xylenes (total)	İ	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

-				Recovery	Well RW-9		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
VOCs (µg/L)							
Acetone		NA	NA	NA	NA	ND	ND
Bromomethane		ND	ND	- ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA
Carbon Disulfide	1	NA	NA	NA	NA	ND	ND
Chloroethane		ND	NA	3.3	ND	ND	ND
1,1-Dichloroethan	ie	1.3	3.3	1.2	1.9	ND	3.0
1,1-Dichloroethen	ie	ND	3.1	5.7	4.4	ND	6.3
1,2-Dichloroethan	ne l	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroct	thene	340	2,100	2,700	3,000	5,300	3,880
trans-1,2-Dichloro	pethene	3	19	32	17	61	32.6
Total 1,2-Dichlore	oethene	343	2119	2732	3017	5361	3,912
1,2-Dichloropropa	ane	ND	ND	ND	ND -	ND	1.8
Chloroform		ND	ND	ND	ND	ND	ND
4-methyl-2-Pentai	none	NA	NA	NA	NA _	ND	ND
1,1,1-Trichloroeth	ane	ND	ND	ND ·	ND	ND	ND
1,1,2-Trichloroeth	ane	ND	ND	ND	ND	ND	, ND
Dibromomethane	Í	ND	NA	NA	NA	ND	ND
Tetrachloroethene	:	ND	ND	3.1	ND	ND	ND
Trichloroethene		23	230	480	300	510	565
1,2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride	Į	5.1	220	410	400	ND	306
Benzene	ŀ	ND	ND	ND	ND	ND	ND
Ethylbenzene		ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND
Xylenes (total)	1	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 4
Recovery Well Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

				Recovery V	Well RW-10		
Parameter	Date Sampled	8/27/1996	11/6/1996	6/12/1997	11/18/1997	4/21/1998	11/2/2001
VOCs (µg/L)							
Acetone		NA	NA	NA	NA	ND	ND
Bromomethane		2	ND	ND	ND	ND	ND
n-Butylbenzene		ND	NA	NA	NA	ND	ND
2-Butanone		NA	NA	NA	NA	NA	NA
Carbon Disulfide		NA	NA	NA	NA	ND	ND
Chloroethane		10	NA	NA	17	ND	17
1.1-Dichloroethar	ne	68	8	55	71	74	82
1.1-Dichloroether	ne	5	ND	7	8	ND	7
1,2-Dichloroethar	ne	ND	ND	ND	ND	ND	ND
cis-1,2-Dichloroe	thene	6,100	1,100	8,600	48,000	11,000	11,000
trans-1,2-Dichlore	oethene	89	28	58	77	84	89
Total 1,2-Dichlor	oethene	6,189	1,128	8,658	48,077	11,084	11,089
1,2-Dichloropropa	ane	ND	ND	ND	1	ND	2
Chloroform	ļ	ND	ND	ND	ND	ND	ND
4-methyl-2-Pentar	none	NA	NA	NA	NA	ND	ND
1,1.1-Trichloroeth	nane	ND	ND	ND	ND	ND	ND
1,1,2-Trichloroeth	nane	ND	ND	ND	ND	ND	ND
Dibromomethane	į	ND	NA	NA	NA	ND	ND
Tetrachloroethene	·	1	ND	1	ND	ND	ND
Trichloroethene		420	53	500	440	640	308
1,2,4-Trimethylbe	enzene	NA	NA	NA	NA	ND	ND
Vinyl Chloride		1,400	290	1,900	1,200	1,400	548
Benzene	ĺ	ND	ND	ND	ND	ND	7
Ethylbenzene		ND	ND	ND	ND	ND	ND
Toluene		ND	ND	ND	ND	ND	ND
Xylenes (total)	ł	ND	ND	ND	ND	ND	ND

Volatile organic compounds (VOCs) reported in micrograms per liter (µg/L).

ND = Not detected above the method detection limit.

NA = Not analyzed.

Table 5 **Groundwater Treatment System Flow Summary** Wayne Reclamation and Recycling Columbia City, Indiana

	Janu	ary-02 FLOW	Fehr	iary-02 FLOW	Ma	rch-02 FLOW	Apr		Мя	y-02 FLOW	.Jun	e-02 FLOW	Jul	y-02 FLOW	Ang	ust-02 FLOW	Septen	nber-02	Octo	her-02 FLOW	Noven	nher-02 FLOW	Decen	mher-02
	DATE		DATE		DATE		DATE	(gpd)	DATE		DATE	(gpd)	DATE		DATE	(gpd)	DATE	FLOW (gpd)	DATE		DATE		DATE	FLOW (gpd)
	,	111,000	1	96,000	1	000,18	1	85,000	1	85,000	i	93,000	1	74,000	1	82,000	1	83,000	<u> </u>	79,000		62,000	1	77,000
	2	111,000	2	79,000	2	83,000	2	85,000	2	101,000	2	93,000	2	60,000	2	82,000	2	83,000	2	79,000	2	62,000	2	77,000
	3	111,000	3	96,000	3	83,000	3	85,000	3	101,000	3	53,000	3	75,000	3	82,000	3	70,000	3	79,000	3	62,000	3	72,000
	[ 4	111,000	4	96,000	4	83,000	4	85,000	4	101,000	4	82,000	4	75,000	4	82,000	4	90,000	4	79,000	4	62,000	4	72,000
	5	111,000	.5	96,000	5	83,000	5	76,000	5	101,000	5	82,000	5	55,000	5	82,000	5	90,000	5	79,000	.5	56,000	5	72,000
	6 7	111,000	6	96,000	6	83,000	6	85,000	6	101,000	6	82,000	6	1,000	6	72,000	6	83,000	6	79,000	6	56,000	6	71,000
	8	61,000	7	100,000	7	83,000	7	85,000	7	87,000	7	70,000	7	0	7	72,000	7	90,000	7	79,000	7	56,000	7	72,000
	\ \ \	64,000 64,000	я 0	102,000	Я O	83,000	R	101,000	R	63,000	R	79,000	R	0	8	78,000	R	90,000	R	71,000	R	56,000	8	72,000
	10	50,000	10	102,000	10	54,000	9	101,000	9	47,000	9	79,000	9	27,000	9	83,000	9	62,000	9	71,000	9	56,000	9	66,000
	,	83,000	11	102,000 76,000	11	65,000	10	101,000	In	78,000	01	79,000	10	52,000	10	83,000	10	92,000	10	71,000	10	56,000	10	67,000
1	12	83,000	12	84,000	12	65,000 57,000	11 12	101,000	11 12	78,000 78,000	11 12	79,000 79,000	11 12	55,000 55,000	11	83,000 83,000	11 12	82,000	11 12	71,000 71,000	11 12	56,000 68,000	11	65,000 67,000
	13	83,000	13	84,000	13	65,000	13	101,000	13	78,000	13	79,000	13	44,000	12 13	83,000	13	92,000 87,000	13	71,000	13	-	12 13	
	14	83,000	14	84,000	14	65,000	14	101,000	14	83,000	14	79,000	13	44,000	14	44,000	13	92,000	14	71,000	14	68,000 68,000	13	67,000 67,000
	15	83,000	15	84.000	15	65,000	15	101,000	15	101,000	15	79,000	15	26,000	15	52,000	15	92,000	15	59,000	15	68,000	15	67,000
	16	83,000	16	84,000	16	72,000	16	101,000	16	101,000	16	79,000	16	18,000	16	52,000	16	92,000	16	59,000	16	68,000	16	67,000
	17	83,000	17	84,000	17	72,000	17	101,000	17	85,000	17	79,000	17	14,000	17	52,000	17	62,000	17	59,000	17	68,000	17	67,000
	18	82,000	18	69,000	18	72,000	18	101,000	18	101,000	18	77,000	18	38,000	18	52,000	18	88,000	18	59,000	18	57,000	18	66,000
	19	82,000	19	84,000	19	55,000	19	98,000	19	101,000	19	77,000	19	60,000	19	67,000	19	68,000	19	59,000	19	57,000	19	67,000
	20	82,000	20	63,000	20	88,000	20	100,000	20	101,000	20	77,000	20	67,000	20	67,000	20	88,000	20	59,000	20	57,000	20	67,000
	21	82,000	21	51,000	21	103,000	21	100.000	21	101,000	21	74,000	21	70,000	21	67,000	21	88,000	21	59,000	21	57,000	21	67,000
	22	82,000	22	84,000	22	105,000	22	100,000	22	101,000	22	77,000	22	59,000	22	67,000	22	88,000	22	59,000	22	42,000	22	67,000
	23	82,000	23	84,000	2.3	105,000	23	88,000	23	94,000	23	77,000	23	0	23	67,000	23	88,000	23	59,000	23	57,000	23	56,000
	24	82,000	24	84,000	24	105,000	24	000,001	24	94,000	24	77,000	24	29,000	24	67,000	24	87,000	24	59,000	24	57,000	24	67,000
	2.5	82,000	25	84,000	25	105,000	25	83,000	25	94,000	25	76,000	25	39,000	25	67,000	25	87,000	25	59,000	25	77,000	25	67,000
í	26	82,000	26	84,000	26	105,000	26	90,000	26	94,000	26	76,000	26	57,000	26	67,000	26	87,000	26	59,000	26	77,000	26	67,000
ł	27	82,000	27	84,000	27	105,000	27	90,000	27	94,000	27	76,000	27	61,000	27	67,000	27	87,000	27	59,000	27	77,000	27	76,000
	28	80,000	28	84,000	28	104,000	28	90,000	28	94,000	28	76,000	28	61,000	28	67,000	28	87,000	28	59,000	28	77,000	28	67,000
ļ	. 29	82,000			29	105,000	29	90,000	29	94,000	29	76,000	29	61,000	29	79,000	29	87,000	29	59,000	29	77,000	29	67,000
	30	82,000			30	105,000	30	90,000	30	94,000	30	76,000	30	61,000	30	93,000	30	87,000	30	59,000	30	77,000	30	66,000
	31	000,08			31	105,000			31	94,000			31	52,000	31	93,000			31	59,000			31	62,000
Total Monthly Flow (gallons)	7	2,639,000		2,400,000		2,609,000	2	,816,000		2,820,000		,337,000		,390,000		2,234,000	2	.549,000		2,053,000		,894,000	:	2,114,000
Average Daily Flow (gallons)		85,129		85,714		84,161		93,867		90,968		77,900	:	44,839		72,065		84,967		66,226	٠	63,133		68,194
Total Plant Run Time (minutes)		44,460		38,725		43,612		42,714		43,054	-	42,430		36,612		44,111		41,305		44,635	-	42,819	-	44,285
As, Flow During Actual Plant Run Time (gpm)		59.4		62.0		59.8		65.9	-	65.5	, .=.	55.1		38.0	٠	50.6	_	61.7		46.0		44.2	•	47.7

gpd = Gallons per day.

gpm = Gallons per minute

Av. = Average.

Table 6
Summary of Monitoring Well Construction Details
Wayne Reclamation and Recycling
Columbia City, Indiana

	TOIC	October-02	Surface	Total	Well	Calculated	Three	Screen	Bottom Screen	Top Screen	Slot			
Well	Elevations	Flevations	Elevation	Depth	Diameter	Well Volume	Well Volumes	Length	Elevation	Elevation	Size	General	Well	Installation
Number	2002	System On	(AMSL)	(bgs)	(inches)	(typical gallons)	(typical gallons)	(feet)	(AMSL) (approx.)	(AMSL) (approx.)	(inches)	Location	Installer	Date
MW-ID	R26 08	806.45	823 RI	150,00	2 00	21.8	65.3	10.00	673.81	683.81	0.010	Southeast Area	Montgomery Watson	Jume-96
MW-2S	R25 14	807 17	822.9N	23.00	2.00	1.2	3,6	10.00	799,90	809.90	0.010	Southeast Area	Warzyn	February-88
MW-3S	R24 06	RO6 43	820 R2	20,00	2.00	0.9	2,8	10.00	800.82	810,82	0.010	Southeast Area	Warzyn	February-88
MW-4S	843.06	809 52	840.04	37,00	2.00	1.1	3.2	10.00	803.04	813,04	0.010	RW-4 Area	Warzyn	February-88
MW-55	833.02	R10.53	830 19	25,00	2.00	0.9	2.6	16.00	R05,19	815,19	0.010	Cemetery	Warzyn	February-88
MW-75	936-12	809,36	R33,70	31,00	2.00	1,1	3.3	10.00	802.70	R12.70	0.010	RW-4 area	Warzyn	February-88
NIW-RS	814.45	ROO 79	832.11	30,00	2.00	1.3	3,8	10.00	802 11	812,11	0.010	AST area	Warzyn	February-RR
MW-8D	R14 11	806.62	831 57	1.50,00	2.00	20,5	61.5	10.00	681.57	691,57	0.010	AST Area	Warzyn	August-RR
MW-95	R25 44	ี	822 43	20,00	2.00	1.2	3.7	10.00	RO2,43	R12,43	0.010	AST Area	Warzyn	February-88
MW-IOS	823-15	R06 76	R21 66	16.00	2.00	0.2	0.5	10,00	R05 66	815,66	0.010	Southeast Area	Warzyn	February-RR
MW-115	R25,09	806 06	R23,26	34.00	2.00	2.8	8,3	10.00	789.26	799.26	0.010	Southeast Area	Warzyn	February-88
MW-135 <sup>(1)</sup>	826.52	R10,94	923,58	25,00	2.00	2.0	6.1	10,00	798.5R	ROR,58 -	-0.010	Southeast Area	Warzyn	* July-88
MW-130 <sup>(1)</sup>	826 44	807 16	823.86	145.00	2.00	21.0	63.1	10.00	679,86	688.86	0.010	Southeast Area	Warzyn	July-88
MW-14S	R21.30	R10 46	×19 11	18,90	2,00	17	5,0	10.00	R00.21	R10,21	0.010	AST Area	Warzyn	July-88
MW-15S	R27 64	810.04	R25 00	25.00	2.00	16	4,9	10,00	R00 00	00,018	0.010	AST Area	Warzyn .	July-90
MW-165	927 41	810,06	R25 21	25,00	2.00	1.6	4,R	10.00	R00 23	810.23	0.010	AST Area	Warzyn	July-90
MW-175	R26.56	810.25	824,66	40.00	2,00	4.2	12.6	10.00	784,66	794 66	0.007	AST Area	Warzyn	August-92
MW-18S	824,16	810,20	821 54	32.50	2.00	3.5	10,4	10.00	789,04	799.04	0.007	AST Area	Warzyn	July-92
MW-195"	832.07	80° 98	8,10,20	25,00	2.00	0.9	2.4	10,00	805,20	815.20	0.010	AST Area	Warzyn	July-92
P-1	834.28	809 63	832.29	28,00	2.00	0.9	2.6	10.00	RO4.29	R14.29	0.010	RW-4 Area	Warzyn	July-##
P-2	825.49	Dry	822.90	18.00	2.00	Dry	Dry	10.00	804.90	814,90	0.010	Southeast Area	Warzyn	July-RR
P-3	R23,4R	809,79	R20.82	20,00	2.00	1.5	4,4	10.00	R00.82	R10.R2	0.010	Southeast Area	Warzyn	July-RR
P.4	R22.67	810,33	820.01	15,00	2.00	0.9	2.6	10.00	805.01	815.01	0.010	AST Area	Warzyn	July-88

# Table 6 Summary of Monitoring Well Construction Details Wayne Reclamation and Recycling Columbia City, Indiana

	TOIC	October 07	Surface	Total	Well	Calculated	Three	Screen	Bottom Screen	Trip Screen	Slot			
Welt	Flevations	Elevations	Elevation	Depth	Diameter	Well Volume	Well Volumes	Length	Elevation	Elevation	Size	General	Well	Installation
Number	2002	System On	(AMSL)	(hgs)	(inches)	(typical gallons)	(typical gallons)	(feet)	(AMSL) (approx.)	(AMSL) (approx.)	(inches)	Location	Installer	Date
MW-RTAS <sup>Ch</sup>	826 13	807 13	R24 39	28.22	2 00	1,8	5.4	5.00	796.17	801.17		Southeast Area	Peerless - Midwest	May <sub>2</sub> 83
MW-R3AD <sup>(3)</sup>	826 15	8D7 60	R24,36	46 95	2,00	5.0	14,9	4,00	777,41	781,41		Southeast Area	Peerless - Midwest	May-R3
MW 83B	840 55	809 80	838 <u>30</u>	60.00	2 00	5.0	150	9.70	778.30	788,00	0,010	Southeast Area	Montgomery Watson	June-96
мw.язпs′′′	R25 21	800 16	923.75	36.40	2.00	3,6	10.7	2.00	787,35	789.35		Southeast Area	Peerless - Midwest	May-83
איי אוחטי"	825 10	R00 52	82182	52.93	2,00	6,3	19,0	0.50	770.99	771.39		Southeast Area	Peerless - Midwest	May-83
GM-I <sup>ch</sup>	841 OR	810 77	ጽ፣ደ ባደ	34,84	2,00	+1	3.3		RO4 14			Landfill	G&M	
GM-2 <sup>ch</sup>	933.30	R11 12	R10 51	18,86	2,00	3.2	9.6	•	791 65			Landfill	G&M	- [
GM-3 <sup>th</sup>	822 87	911 14	820 65	27.75	2,00	3,0	9,0	-	792.90			Landfill	G&M	
GM-4 <sup>rb</sup>	827 40	911.01	824 11	27 95	2 00	2.4	7.3	·	796,16			Landfill	G&M	:
PZ-1'45	R23 70	800 55 <sup>51</sup>	821.00	26,00	2.00	2.3	6.9	5.00	795.00	800.00	0,010	AST Area	MWH	December-02
PZ-2 <sup>rb</sup>	R25 77	R11 OR'	82180	17.00	2.00	1.1	3.3	5.00	806,80	811.80	0.010	Southeast Area	мwн	December-02
PZ-3 <sup>(4)</sup>	826 49	R10,64 <sup>(5)</sup>	823 10	20.00	2,00	1.1	3.3	5.00	803 10	808.10	0.010	Southeast Area	мwн	December-02
PZ-4 <sup>(4)</sup>	R25,45	810 244	R21 45	17.00	2,00	0.8	2.4	5.00	RO4 45	809,45	0.010	RW-5 Area (Landfill)	MWH	December-02

#### Notes

1016 Top of linest well casing, AMST - above mean sea level, bgs. - below ground surface, AST - Above ground Storage Tank, MW - monitoring well, Pland P2 - piezometer

Depth to groundwater measured in feet below FOIC

. No data available

Prior to 2001, TOTAl elevations based on Ayres-Lewis-Norris-May, Inc. survey on 10/10/97.

TOTC and surface elevations based on Benchmark Surveying, Inc. nurvey on 7/2/01 and 10/25/01, except where noted

<sup>&</sup>quot;TOTA elevations based on InSite. Inc. survey of 7/2/02, following repair of those wells:

 $<sup>^{10}</sup>$  Lotal depth and screen length revised based on InSite, Inc. field documentation study on 7/17/02

<sup>&</sup>quot;Commitmater elevations estimated for CAL-1 through GAL4 for April 2001 reading, that same value is used for October 2002.

<sup>11</sup> ICHC elevations based on preliminary succey by InSite, Inc. on 1/14/03. Surface elevations have not been determined at this time, and this well volume calculations are estimated

Groundwater elevations from first round of measurements following piezometer attrallation, in 1/14/03.

Table 7
Summary of Groundwater Elevations
Wayne Reclamation and Recycling
Columbia City, Indiana

	TOIC	July-02	August-02	September-02	October-02	November-02	December-02
Well	Elevations	Elevations	Elevations	Elevations	Elevations	Elevations	Elevations
Number	July 2002	System On	System On	System On	System On	System On	System On
MW-1D	826.08				806.45		•
MW-2S	825.34	808.65	807.10	806.87	807.17	807.63	807.18
MW-3S	824.06	808.52	Dry	Dry	806.43	806.96	806.55
MW-4S	843.06				809.52		
MW-5S	833.02				810.53		
MW-7S	836.12				809.36		
MW-8S	835.52				809.79		
MW-8D	834.11				806.62		
MW-9S	825.44				809.87		
MW-10S	823.15	808.49	806.44	806.20	806.76	807.26	806.86
MW-11S	825.08	808.69	806.92	806.64	806.06	806.96	807.68
MW-13S <sup>(1)</sup>	826.52	810.97	810.89	811.06	810.94	811.29	811.11
MW-13D <sup>(1)</sup>	826.44				807.16		
MW-14S	821.30				810.46		
MW-15S	827.64				810.04		
MW-16S	827.41				810.06		
MW-17S	826.56				810.24		
MW-18S	824.16				810.20		
MW-19S <sup>(1)</sup>	832.07		5		809.98		
P-1	834.28				809.63		
P-2	825.49			**-	Dry		
P-3	823.48			•	809.79		
P-4	822.67				810.33		
MW-83AS	826.13	808.67	807.08	806.78	807.13	807.61	807.13
MW-83AD	826.15	808.98	808.24	808.16	807.60	808.18	808.60
MW-83B	840.55				808.80		
MW-83DS	825.21	809.82	809.64	809.70	809.16	809.57	809.88
MW-83DD	825.30				809.52		
GM-1	841.08						
GM-2	833.30						
GM-3	822.87						
GM-4	827.40						

TOIC = Top of inner well casing; P = piezometer.

Depth to groundwater measured in feet below TOIC.

---- = No data available.

TOIC and surface elevations based on Benchmark Surveying, Inc., survey on 7/2/01 and 10/25/01, except where noted.

<sup>11</sup> TOIC elevations based on InSite, Inc. survey of 7/02/02, following repair of those wells

Table 8

Columbia City Municipal Water Supply Well Results - VOCs and PCBs

Wayne Reclamation and Recycling

Columbia City, Indiana

	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal
	Well No. 7	Well No. 8	Well No. 7	Well No. 8	Well No. 7	WellNo. 8	Well No. 7	Well No. 8	Well No. 7	Well No. 8
Parameter Date Sampled	10/14/	/1998	12/9/	1999	10/3/	2000	10/31	/2001	10/23	/2002
VOCs (ug/L)									-	
Benzene	<5.0	<5.0	<5.0	< 5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Bromodichloromethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Bromoform	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0
Bromomethane	<10	<10	<10	<10	<10	<10	<1.0	<1.0	<5.0	<5.0
Carbon disulfide	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Carbon tetrachloride	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chlorobenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chlorodibromomethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Chloroethane	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0
Chloroform	<5.0	<5.0	<20	<20	<20	<20	<1.0	<1.0	<1.0	<1.0
Chloromethane	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0
1,1-Dichloroethane	<5.0	<5.0	<5.0	: <5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.2-Dichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.1-Dichlororethene	<5.0	<5.0	<5.0	<5.0	₹5.0	<5.0	<1.0	<1.0	<1.0	<1.0
cis-1.2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
trans-1,2-Dichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.2-Dichloropropane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
cis-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
trans-1,3-Dichloropropene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Ethylbenzene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
2-Hexanone	<50	<50	<50	<50	<50	<50	<12.5	<12.5	<12.5	<12.5
Methylene chlonde	<10	<10	<10	<10	<10	<10	<5.0	<5.0	<5.0	<5.0
Methyl-ethyl-ketone	<50	<50	<50	<50	<50	<50	<12.5	<12.5	<12.5	<12.5
4-Methyl-2-pentanone	<50	<50	<50	<50	<50	<50	<12.5	<12.5	<12.5	<12.5
Styrene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.1,2.2-Tetrachloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Tetrachloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Toluene	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.1.1-Trichloroethane	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
1.1.2-Trichloroethane	<5.0	<5.0	<5.0	< 5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
Trichloroethene	<5.0	<5.0	<5.0	<5.0	<5.0	< 5.0	<1.0	<1.0	<1.0	<1.0
Vinyl chloride	<2	<2	<5.0	< 5.0	<2.0	<2.0	<1.0	<1.0	<1.0	<1.0
Xylenes (total)	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0	<1.0
PCBs (µg/L)										
Aroclor 1016	<1	<)	NA	NA	NA	NA	NA	NA	NA	. NA
Aroclor 1221	<1	<1	NA NA	NA	NA	NA NA	NA NA	NA.	NA NA	NA NA
Aroclor 1232	<1	<1	NA NA	NA	NA NA	NA NA	NA NA	NA	NA NA	NA
Aroclor 1242	<1	<1	NA NA	NA .	NA NA	NA NA	NA NA	NA NA	NA NA	NA.
Aroclor 1248	<1	<1	NA NA	NA	NA NA	NA.	NA NA	NA	NA NA	NA NA
Aroclor 1254	<1	<1	NA NA	NA.	NA NA	NA NA	NA NA	NA	NA NA	NA
Aroclor 1260	<1	<1	NA NA	NA	NA NA	NA NA	NA NA	NA	NA NA	NA
JANAIOL 1200		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	144	17/0	L_ NA		14W	INA	L "^	

Volatile organic compounds (VOCs) and polychlorinated hiphenyls (PCBs) reported in micrograms per liter ( $\mu g T_{\rm s}$ ). October 2002 data was validated to Level IV, no flags were required for the data in this table collected on that date NA = Not analyzed.

Table 9
Columbia City Municipal Water Supply Well Results - Metals and Inorganics
Wayne Reclamation and Recycling
Columbia City, Indiana

	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal	Municipal
	Well No. 7	Well No. 8	Well No. 7	Well No. 8	Well No. 7	Well No. 8	Well No. 7	Well No. 8	Well No. 7	Well No. 8
Parameter Date Sampled				1999		2000		/2001	10/23	
Talameter Daw Samples	10/14		12/9/	1777	10/3/	2000	10/31	72001	10/23	
Total Metals (mg/L)	,		,	,						
Aluminum	<0.10	<0.10	<0.10	< 0.10	<0.10	< 0.10	< 0.050	< 0.050	<0.050	< 0.050
Antimony	<0.005	< 0.005	<0.005	< 0.005	<0.026	<0.026	<0.0010	<0.0010	<0.0010	<0.0010
Arsenic	0.0083	0.0071	0.0091	0.0056	<0.028	<0.028	0.0087	0.0062	0.0087	0.0066
Barium	0.15	0.13	0.12	0.11	0.15	0.13	0.161	0.138	0.150	0.132
Beryllium	< 0.003	< 0.003	<0.003	< 0.003	< 0.003	< 0.003	< 0.0010	< 0.0010	<0.0010	< 0.0010
Cadmium	<0.005	< 0.005	<0.010	< 0.010	< 0.005	<0.005	<0.0010	< 0.0010	<0.0010	< 0.0010
Calcium	86	83	70	67	87	80	80.2	75.8	89.8 (J)	92.9
Chromium	<0.010	<0.010	<0.010	<0.010	<0.010	< 0.010	<0.0020	<0.0020	<0.0020	< 0.0020
Cobalt	< 0.020	< 0.020	<0.020	<0.020	<0.020	< 0.020	<0.0050	< 0.0050	<0.0050	< 0.0050
Copper	<0.010	<0.010	<0.010	<0.010	< 0.005	< 0.005	<0.0050	< 0.0050	<0.0050	< 0.0050
Iron	2	1.6	1.6	1.4	1.8	1.5	1.82	1.5	1.85	1.66
Lead	<0.005	< 0.005	<0.005	< 0.005	<0.018	<0.018	<0.0010	< 0.0010	<0.0010	<0.0010
Magnesium	35	36	28	29	34	34	32.1	32.8	33.7 (J)	36.7
Manganese	0.16	0.14	0.11	0.12	0.12	0.13	0.109	0.114	0.112	0.119
Mercury	<0.0005	< 0.0005	<0.0005	< 0.0005	<0.0005	<0.0005	<0.0002	<0.0002	<0.0002	<0.0002
Molybdenum	0.023	0.031	0.025	0.031	<0.020	0.021	<0.020	0.021	NA	NA
Nickel	<0.020	<0.020	<0.020	< 0.020	<0.002	<0.0068	< 0.0050	<0.0050	<0.0050	< 0.0050
Potassium	1.4	1.5	<5.0	<5.0	<5.0	<5.0	1.6	1.8	1.8	2.4
Selenium	<0.005	<0.005	<0.005	< 0.005	< 0.036	< 0.005	<0.20	<0.20	<0.0050	< 0.0050
Silver	<0.020	<0.020	<0.020	<0.020	< 0.005	<0.005	<0.0005	< 0.0005	<0.0005	<0.0005
Sodium	13	17	11	13	14	17	14	15.8	12.8	17.7
Thallium	<0.002	<0.002	<0.002	<0.002	<0.002	<0.002	<0.0100	< 0.0100	<0.0010	<0.0010
Vaπadıum	< 0.02	<0.02	<0.020	<0.020	<0.02	<0.02	<0.050	<0.050	<0.0050	< 0.0050
Zinc	0.024	<0.020	<0.020	<0.020	<0.020	0.04	<0.050	<0.050	<0.050	< 0.050
				*****						0.000
Inorganics/Wet Chemistry (mg/L)				!				I		
Biological Oxygen Demand (BOD)	<5	<5	NA							
Chemical Oxygen Demand (COD)	<10	<10	NA	NA	NA	NA	NA	NA	NA NA	NA
Total Cyanide	<0.005	< 0.005	<0.005	< 0.005	<0.005	< 0.005	<0.005	< 0.005	<0.005	<0.005
Oil and Grease	<5	<5	NA							
Total Phenols	<0.010	<0.010	NA							
Total Phosphorus	< 0.05	<0.05	NA	NA	NA	NA	NA	NA	NA NA	NA
Surfactants (MBAs)	0.10	<0.1	NA	NA	NA	NA	NA NA	NA	NA	NA NA
Total Suspended Solids	<5	<5	NA NA	NA	NA	NA	NA	NA	NA NA	NA NA
Nitrite Nitrogen	0.021	0.022	NA NA	NA	NA.	NA	NA NA	NA	NA NA	NA NA
Nitrate Nitrogen	<0.021	<0.022	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA.
Ammonia Nitrogen	0.38	0.02	NA NA	NA .	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
•			1				ļ			
Total Kieldahl Nitrogen	0.64	0.73	NA	NA	NA	NA	NA	NA	NA NA	NA

Total metals and morganic wet chemistry parameters reported in milligrams per liter (mg/L)

NA = Not analyzed

October 2002 data was validated to Level IV, (J) = estimated

Table 10
Blue River Analytical Results
Wayne Reclamation and Recycling
Columbia City, Indiana

	<del></del>						<del></del>		<del></del>	
Sample Identification	<u>\$W-</u> 1	<u>SW-2</u>	SW-3	<u>SW-4</u>	<u>SW-5</u>	SW-6	SW-7	BR-1	BR-2	BR-3
Location	300 feet upstream of north site boundary (background)	Near center of landfill	Approximately adjacent to RW-10	150 feet downstream of MW-83DS (Southeast Area)	130 feet downstream of MW-13S (Southeast Area)	Approximately adjacent to RW-2 (AST Area)	500 feet downstream of west site boundary	Adjacent to MW-9S (AST Area)	Adjacent to MW-13S (Southeast Area)	Near RW-5 (southeast corner of landfill)
Parameter Date Sampled			3	/17/1988 and 3/18/	1988		•		12/11/2002	
VOCs (µg/L)										
Bromomethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
n-Butylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND .
1.1-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	- ND	ND
1,1-Dichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1,2-Dichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Total 1,2-Dichloroethene	ND	ND	1.0	4.0	4.0	4.0	3.0	ND	ND	ND -
1,2-Dichloropropane	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Chloroform	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
4-Methyl-2-Pentanone	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.1.1-Trichloroethane	ND	ND	ND	ND	· : ND	ND	ND	ND	ND	ND
1,1,2-Trichloroethane	ND	ND	ND	ND	ND	ND	ND	ND	ŅD	ND
Dibromomethane	ND	ND	ND	ND	ND	ND	ND	ND	NĎ	ND
Tetrachloroethene	ND	ND	ND	ND	ND	. ND	- ND	ND	ND	ND
Trichloroethene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
1.2.4-Trimethylbenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
Vmyl Chloride	ND	ND	ND	ND	ND	ND	ND	NÐ	ND	. ND
Benzene	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
l'oluene	ND	ND	ND	ND	ND	ND	ND	ND -	ND	ND
Ethylhenzene	ND	ND	ND	ND	ND	ND	ND	ND	ND .	ND
Xylenes (total)	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
SVOCs (µg/L)					-	-				
Diethylphthalate	0.1	1.0	0.1	ND	ND	0.2	0.3	NΛ	NA	NA
Pyrene	ND	ND	0.1	ND	ND	ND	ND	NA	NA	NA
Pesticides (µg/L)	ND	ND	ND	ND	ND	ND	ND	NA	NΛ	NΛ
PCBs (µg/L)	ND	ND	ND	ND	ND	ND	ND	NA	NΛ	NA

In samples where total 1,2-dichloroethene has been listed, cis-1,2-dichloroethene is included in that total.

Volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCS), pesticides, and polychlorinated hiphenyls (PCBs) reported in micrograms per liter (µg/L).

SW = Surface water; BR = Blue River; RW = recovery well; MW = monitoring well; AST = Aboveground Storage Tank.

ND = Not detected above the method detection limit; NA = not analyzed.

Locations of SW-1 through SW-7 are shown on Figure 9 of the Final Remedial Investigation Report by Warzyn Engineering Inc., dated June 1, 1989.

December 2002 data was validated to Level IV; no flags were required for the data shown in this table.

Table 11
Summary of Recovery Well Construction Details
Wayne Reclamation and Recycling
Columbia City, Indiana

Recovery Well Number	TOIC Elevations 2001	Surface Elevations (AMSL)	Total Depth (bgs)	Well Diameter (inches)	Screen Length (feet)	Sump Length (feet)	Bottom Screen Elevation (AMSL) (approx.)	Top Screen Elevation (AMSL) (approx.)	Slot Size (inches)	General Location	Installation Date
RW-1	818.45	819.52	32.00	6	20	5	792.52	812.52	0.02	AST Area	October-94
RW-2	824.29	825.07	40.00	6	20	5	790.07	810.07	0.02	AST Area	October-94
RW-3	822.71	823.36	32.00	6	20	5	796.36	816.36	0.02	AST Area	October-94
RW-4	833.24	833.53	48.30	6	20	5	790.23	810.23	0.02	RW-4 Area	October-94
RW-5	823.94	824.20	40.00	6	30	0	784.20	814.20	0.02	SE Area	October-94
RW-6	820.71	821.62	43.50	6	35	0 -	778.12	813.12	0.02	SE Area	October-94
RW-7	820.21	821.51	36.00	6	30	0	785.51	815.51	0.02	SE Area	October-94
RW-8	821.86	823.03	41.80	6	35	0	781.23	816.23	0.02	SE Area	October-94
RW-9	821.69	821.88	37.00	6	30	0	784.88	814.88	0.02	SE Area	October-94
RW-10	822.55	824.03	40.30	6	35	0	783.73	818.73	0.02	SE Area	October-94

TOIC = Top of inner well casing.

AMSL = Above mean sea level.

bgs = Below ground surface.

RW = Recovery well.

AST = Aboveground Storage Tank.

SE = Southeast.

Depth to groundwater measured in feet below TOIC.

Prior to 2001, TOIC elevations based on Ayres-Lewis-Norris-May, Inc. survey on 10/10/97.

TOIC and surface elevations based on Benchmark Surveying, Inc. survey on 7/2/01 and 10/25/01.

Construction details from As-Built Remedial Design drawings (Warzyn, March 1995).

Table 12
Summary of Groundwater Treatment System VOC Influent and Effluent Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Contaminant	IN 18-Jan-02	EFF 18-Jan-02	IN 7-Feb-02	EFF 7-Feb-02	IN 21-Mar-02	EFF 21-Mar-02
1,1-Dichloroethane	21	<5	28	<5	11	<5
1,2-Dichloroethane	<5	<5	<5	<5	<5	<5
1,1-Dichloroethene	<5	<5	<5	<5	<5	<5
cis-1,2-Dichloroethene	1,800	93	1,900	180	1,200	79
trans-1,2-Dichloroethene	23	<5	25	<5	14	<5
Trichloroethene	210	<5	240	8	230	<5
Vinyl Chloride	200	<2	260	<2	190	<2
Total VOC Concentration	2,254	93	2,453	188	1,645	79
Contaminant	IN 24-Apr-02	EFF 24-Apr-02	IN 23-May-02	EFF 23-May-02	IN 18-Jun-02	EFF 18-Jun-02
1,1-Dichloroethane	<50	<5	11	<5	<50	<5
1,2-Dichloroethane	<50	<5	<5	<5	<50	<5
1,1-Dichloroethene	<50	<5	<5	<5	<50	<5
cis-1,2-Dichloroethene	770	78	1.300	69	1,300	86
trans-1,2-Dichloroethene	<50	<5	14	<5	<50	<5
Trichloroethene	74	<5	230	<5	320	7
Vinyl Chloride	160	<2	190	<2	180	<2
Total VOC Concentration	1,004	78	1,745	69	1,800	93

All results reported in  $\mu g/L$  (micrograms per liter = parts per billion).

VOC = Volatile organic compound: IN = influent sample: EFF = effluent sample.

Results indicated for primary detected constituents.

Table 12
Summary of Groundwater Treatment System VOC Influent and Effluent Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Total VOC Concentration	1,941	41	1,922	66	2,035	150
Vinyl Chloride	220	<2	182	<u>&lt;1</u> .	166	<1
Trichloroethene	300	<5	334	4.3	300	11.4
trans-1,2-Dichloroethene	14	<5	16	<1	14.4	<1
cis-1,2-Dichloroethene	1,400	41	1,380	62	1,540	139
1,1-Dichloroethene	<b>&lt;</b> 5	<5	2.5	<1	2.6	<1
1,2-Dichloroethane	<b>&lt;</b> 5	<5	<1	<1	<1	<1
1,1-Dichloroethane	6.6	<5	7.4	<1	11.8	<1
Contaminant	IN 24-Oct-02	EFF 24-Oct-02	IN 21-Nov-02	EFF 21-Noy-02	IN 13-Dec-02	EFF 13-Dec-02
Total VOC Concentration	1,360	98	1,213	33	1,659	58
Vinyl Chloride	200	<2	140	<2	140 (R)	<1 (R)
Trichloroethene	190	6.8	180	<5	220 (R)	3.1 (R)
trans-1,2-Dichloroethene	<5	<5	11	<5	10.9 (R)	<1 (R)
cis-1,2-Dichloroethene	970	91	870	33	1280 (R)	54.5 (R)
1,1-Dichloroethene	<5	<5	<5	<5	1.9 (R)	<1 (R)
1,2-Dichloroethane	<5	<5	<5	<5	<1 (R)	<1 (R)
1,1-Dichloroethane	<5	<5	12	<5	6.5 (R)	<1 (R)
Contaminant	IN 19-Jul-02	EFF 19-Jul-02	IN <u>14-Aug-02</u>	EFF 14-Aug-02	IN 20-Sep-02	EFF 20-Sep-02

All results reported in  $\mu g/L$  (micrograms per liter = parts per billion).

VOC = Volatile organic compound: IN = influent sample; EFF = effluent sample.

Results indicated for primary detected constituents.

July through December 2002 data was validated to Level IV: (R) = rejected.

Table 13
Summary of Groundwater Treatment System Effluent Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

Parameter Date Sampled	11/18/1997	12/18/1997	1/30/1998	10/13/98	10/13/99	10/6/2000	10/31/2001	10/24/2002
Total Metals (mg/L)								
Arsenic	0.015	0.0044	0.005	< 0.005	< 0.005	<0.028	<0.0050	<0.0050
Beryllium	<0.0050	<0.0050	<0.0050	< 0.003	< 0.003	< 0.003	<0.0010	<0.0010
Cadmium	< 0.0050	<0.0050	<0.0050	< 0.005	< 0.010	< 0.005	<0.0010	<0.0010
Chromium	< 0.010	<0.010	<0.010	< 0.010	< 0.010	<0.010	<0.0020	<0.0020
Соррет	0.032	<0.020	1.9	<0.010	< 0.005	< 0.005	<0.0050	<0.0050
Lead	< 0.10	<0.10	< 0.10	< 0.005	< 0.005	<0.005	<0.0010	<0.0010
Mercury	<0.00020	<0.00020	<0.00020	< 0.0005	<0.0005	<0.0005	<0.0002	<0.0002
Molybdenum	<0.20	<0.20	<0.20	<0.020	< 0.020	<0.020	0.0061	0.0084
Nickel	< 0.050	<0.020	<0.020	<0.020	<0.020	< 0.005	0.0091	0.0078
Potassium	12.0	12.0	9.5	11.0	9.0	9.0	8.6	10.7
Selenium	<0.0020	<0.0020	<0.0020	< 0.005	< 0.005	< 0.036	<0.0050	<0.0050
Silver	<0.010	<0.010	<0.010	< 0.020	< 0.001	<0.005	<0.0005	<0.0005
Zinc	0.054	<0.020	<0.020	<0.020	<0.020	<0.020	<0.050	<0.050
Inorganics/Wet Chemistry (mg/L)								
Biological Oxygen Demand (BOD)	<2.0	<2.0	<2.0	<5	6	8	<5	9.4
Chemical Oxygen Demand (COD)	23	18	21	<10	<10	16	72	24
Total Cyanide	< 0.005	< 0.005	<0.0050	< 0.005	< 0.005	<0.020	<0.005	<0.005
Oil and Grease	<5.0	<5.0	<5.0	<5.0	6.	6	<5	<5
рН	8.3	8.27	7.65	NA	7.2	7.2 :	NA	NA
Total Phenols	<0.01	<0.01	0.17	< 0.010	<0.010	<0.005	0.0093	0.0084
Total Phosphorus	0.93	0.75	0.96	<0.05	0.48	<0.15	<0.15	<0.15
Surfactants (MBAs)	Negative	Negative	Negative	Positive	Positive	Negative	0.13	0.16
Total Solids	1100	820	850	830	790	820	850	800
Total Suspended Solids	11	14	19	27	<5	5	9	<5
Nitrate/Nitrite Nitrogen	0.32	0.33	0.44	0.036	0.04	0.033	0.23	0.033
Ammonia Nitrogen	0.72	0.15	0.28	1.00	0.80	1.10	1.20	1.8
Total Kjeldahl Nitrogen	47	1.21	0.98	1.6	1.09	1.5	1.6	2.1
PCBs (µg/L)								
Aroclor 1016	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1221	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1232	<0.4	<0.4	<0.4	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1242	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1248	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1254	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21
Aroclor 1260	<0.2	<0.2	<0.2	<1.0	<0.7	<1.0	<0.21	<0.21

Total metals and inorganic/wet chemistry parameters reported in milligrams per liter (mg/L)

Polychlorinated biphenyls (PCBs) are reported in micrograms per liter (µg/L)

October 2002 data was validated to Level IV, no flags were required for the data in this table collected on that date.

Table 14
Summary of Treatment System Air Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

	IN	EFF	IN	EFF	IN	EFF
Constituent	23-Apr-99	23-Apr-99	17-May-99	17-May-99	24-Jun-99	24-Jun-99
Constituent		23-Apr-22	17-14-43-22	11-1-11-19-22	24-1011-22	24 3411 22
Tetrachloroethene	<14	17	110	52	46	6
Trichloroethene	220	300	570	240	860	120
1,1-Dichloroethene	<14	<13	<18	<12	<17	6
cis-1,2-Dichloroethene	1,600	1,500	2,200	1,000	2,300	390
trans-1,2-Dichloroethene	50	58	, 52	36	140	35
Vinyl Chloride	360	280	220	120	240	35
1,1,1-Trichloroethane	36	36	83	25	43	8
1,1-Dichloroethane	26	25	29	13	45	9
Toluene	20	<13	<18	<12	<17	3
Cumulative Risk	7.52E-07	5.93E-07	4.98E-07	2.67E-07	5.45E-07	7.90E-08
1	EFF	EFF;	EFF	EFF	EFF	EFF
Constituent	13-Jul-99	6-Aug-99	1-Sep-99	14-Oct-99	23-Nov-99	13-Dec-99
Tetrachloroethene	51	27	25	63	16	38
Trichloroethene	440	<b>:810</b>	390	1,700	390	520
1,1-Dichloroethene	<7.8	<9.2	4	<9.2	<14	<12
cis-1,2-Dichloroethene	2.200	<9.2	1,600	3,300	1,400	1,500
trans-1,2-Dichloroethene	100	140	120	260	76	95
Vinyl Chloride	340	270	220	180	200	200
1,1,1-Trichloroethane	180	44	200	99	97	66
1,1-Dichloroethane	45	45	60	61	32	32
Toluene	<7.8	<9.2	<2.3	<9.2	<14	<12
Cumulative Risk	7.29E-07	6.01 <b>E-0</b> 7	4.76E-07	4.68E-07	4.33E-07	4.44E-07

All results reported in parts per billion (volume/volume).

IN = Influent: EFF = effluent sample.

NA = Not analyzed.

Results indicated for primary detected constituents.

Air treatment system discontinued on June 24, 1999.

Cumulative Risk calculation indicated on Table 15.

Table 14
Summary of Treatment System Air Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

	EFF	EFF	EFF	EFF	EFF	EFF
Constituent	3-Jan-00	7-Feb-00	15-Маг-00	25-Apr-00	24-May-00	6-Jun-00
Tetrachloroethene	57	<8.3	88	<21	110	30
Trichloroethene	440	220	400	300	440	380
1 Hemor Gethene	440	220	400	300	440	360
1,1-Dichloroethene	<18	<8.3	<9.0	<3.1	<12	2
cis-1,2-Dichloroethene	1,100	740	1.200	2,300	1,000	1,800
trans-1,2-Dichloroethene	68	55	46	83	71	85
Vinyl Chloride	94	91	61	260	130	190
1,1,1-Trichloroethane	110	29	89	47	150	110
1,1-Dichloroethane	29	17	25	31	30	27
Toluene	<18	<8.3	<9.0	<3.1	<12	<2.0
Cumulative Risk	2.25E-07	2.00E-07	1.60E-07	5.52E-07	3.07E-07	4.14E-07
	EFF	EFF	EFF	EFF	EFF	EFF
Constituent	25-Jul-00	4-Aug-00	5-Sep-00	6-Oct-00	7-Nov-00	21-Dec-00
Tetrachloroethene	31	56	22	52	110	38
Trichloroethene	290	840	540	920	840	760
1.1-Dichloroethene	<9.7	<12	<12	<18	<10	<9.3
cis-1.2-Dichloroethene	1.400	2,200	2.100	2,200	1,900	1,900
trans-1.2-Dichloroethene	39	100	140	160	97	100
Vinyl Chloride	190	230	210	130	170	190
1,1,1-Trichloroethane	80	59	80	93	73	50
1,1-Dichloroethane	21	30	34	49	36	30
Toluene	<9.7	<12	<12	<18	<10	<9.3
Cumulative Risk	4.10E-07	5.25E-07	4.63E-07	3.23E-07	4.10E-07	4.36E-07

All results reported in parts per billion (volume/volume).

EFF = Effluent sample.

NA = Not analyzed.

Results indicated for primary detected constituents.

Air treatment system discontinued on June 24, 1999.

Cumulative Risk calculation indicated on Table 15.

Table 14
Summary of Treatment System Air Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

	·					
	EFF	EFF	EFF	EFF	EFF	EFF
Constituent	30-Jan-01	26-Feb-01	21-Mar-01	23-Apr-01	21-May-01	<u>13-Jun-01</u>
	20		2.4	, '		
Tetrachloroethene	38	<140	34	<140	<150	<150
Trichloroethene	630	260	340	160	<150	430
1,1-Dichloroethene	<9.2	<140	2.1	<140	<150	<150
cis-1,2-Dichloroethene	2.000	1,700	1,300	1,000	630	1,400
trans-1,2-Dichloroethene	49	NA	, NA	NA	NA	NA
Vinyl Chloride	270	180	190 '	160	<150	210
1,1,1-Trichloroethane	53	<140	26	<140	<150	<150
1,1-Dichloroethane	30	<140	18.	<140	<150	<150
Toluene	<9.2	<140	4.0	<140	<150	<150
Cumulative Risk	5.93E-07	4.05E-07	4.13E-07	3.58E-07	3.39E-07	4.77E-07
-	EFF	EFF.:	EFF	EFF	EFF	EFF
Constituent	23-Jul-01	23-Aug-01	17-Sep-01	31-Oct-01	18-Nov-01	28-Dec-01
Tetrachloroethene	<140	<140	<140	<140	<100	<130
Trichloroethene	140	.280	280	410	460	300
1,1-Dichloroethene	<140	<140	<140	<140	<100	<130
cis-1,2-Dichloroethene	1,100	600	680	1,500	2.200	1,700
trans-1.2-Dichloroethene	NA	NA	NA	<140	<100	NA
Vinyl Chloride	<140	<140	<140	260	210	210
1.1.1-Trichloroethane	<140	<140	<140	<140	<100	<130
1,1-Dichloroethane	<140	<140	<140	<140	<100	<130
Toluene	<140	<140	<140	<140	<100	<130
Cumulative Risk	3.16E-07	3.24E-07	3.24E-07	5.77E-07	4.71E-07	4.67E-07

All results reported in parts per billion (volume/volume).

EFF = Effluent sample

NA = Not analyzed.

Results indicated for primary detected constituents.

Air treatment system discontinued on June 24, 1999.

Cumulative Risk calculation indicated on Table 15.

Table 14
Summary of Treatment System Air Sampling
Wayne Reclamation and Recycling
Columbia City, Indiana

<del></del>	EFF	EFF	EFF	EFF	EFF	EFF
Constituent	Err 18-Jan-02	7-Feb-02	21-Mar-02	23-Apr-02	23-May-02	18-Jun-02
Constituent	16-Jan-02	1-1-CD-02	21-Mai-02	2.1-Apt-02	2.3-1VIAY-02	10-3111-02
Tetrachloroethene	<130	<130	<140	7.8	<140	<140
Trichloroethene	280	530	180	29	160	290
1,1-Dichloroethene	<130	<130	<140	<0.69	<140	<140
cis-1,2-Dichloroethene	1,600	2.800	900	37	800	1,200
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA
Vinyl Chloride	280	500	160	1.0	150	220
1,1,1-Trichloroethane	<130	<130	<140	42	<140	<140
1,1-Dichloroethane	<130	<130	<140	3.5	<140	<140
Toluene	<130	<130	<140	<0.69	<140	<140
Cumulative Risk	6.09E-07	1.07E-06	3.59E-07	4.79E-09	3.38E-07	4.88E-07
	EFF	EFF	EFF	EFF	EFF	EFF
Constituent	19-Jul-02	14-Aug-02	20-Sep-02	24-Oct-02	21-Noy-02	13-Dec-02
Tetrachloroethene	<140	<140	<100	<130	<140	<140
Trichloroethene	<140	200	520	1.000	720	410
1.1-Dichloroethene	<140	<140	<100	<130	<140	<140
cis-1.2-Dichloroethene	230	920	1.500	1,500	1.200	1,100
trans-1,2-Dichloroethene	NA	NA	NA	NA	NA	NA
Vinyl Chloride	<140	220	<100	<130	<140	<140
1.1.1-Trichloroethane	<140	<140	<100	<130	<140	<140
1.1-Dichloroethane	<140	<140	<100	<130	<140	<140
Toluene	<140	<140	<100	<130	<140	<140
Cumulative Risk	3.16E-07	4.84E-07	2.48E-07	3.47E-07	3.47E-07	3.31E-07

All results reported in parts per billion (volume/volume).

EFF = Effluent sample: NA = not analyzed.

Results indicated for primary detected constituents.

Air treatment system discontinued on June 24, 1999.

Cumulative Risk calculation indicated on Table 15.

July through December 2002 data validated to Level IV: no flags required for data in this table collected on those dates.

Table 15
Summary of Air Dispersion Calculations
Wayne Reclamation and Recycling
Columbia City, Indiana

					-		Chemicals					Comulative
Scenario		Input /	Tetrachloroethene	Trichloroethene	1.1-Dichloroethene	cls-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichioroethane	1.1-Dichloroethane	Toluene	Сапсег
No.	Description	Output	Carcinogen	Carcinogen	Non-Carcinogen	Non-Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Risk
na	IN	(ինի)	46	860	17	2300	140	240	43	45	17	
	24-Jun-99	(g/s)	0,0003	0.0048	0,0001	0.0129	0,0008	0.0013	0.0002	0,0003	0,0001	
		Max.Conc	0.001	0.023	0.000	0,060	0.004	0.006	0,001	0.001	0,000	
		ECR	7.14E-09	4.52E-08				4.92E-07		1.93E-11		_ 5.45E-07
94	EFF	(իրի)	6	120	6	390	35	35	8	9	3	
	24.Jun-99	(p/s)	0,0000	0,0007	0,000	0.0022	0.0002	0,0002	0.0000	0,0001	0.0000	•
	•	Max.Conc	0.000	0.003	0,000	0.010	0.001	0.001	0.000	0.000	0,000	
		ECR	9.31E-10	6.31E-09	**			7.18E-08		3.86E-12	1	7.90E-08
05	EFF	(pph)	51	440	Я	2200	100	340	180	45	8	
	13.101.99	(g/s)	0.0003	0.0025	0.0000	0.0123	0.0006	0.0019	0.0010	0,0003	0,0000	-
		Max Conc	0.001	0.012	0,000	0.058	0.003	0.009	0.005	0.001	0,000	
		ECR	7.91E-09	2.31E-08	1			6.97E-07		1.93E-11	1	7.29E-07
36	EFF	(իրի)	27	810	45	9	140	270	44	45	9	
	6-Aug-99	(g/s)	0,0002	0.0045	0,0003	0,0001	8000,0	0.0015	0,0002	0,0003	0,0001	
į		Max Conc.	0.001	0.021	0,001	0.000	0.004	0.007	0.001	100,0	0.000	}
		ECR	4.19E-09	4.26E-08	· ·			5.54E-07	•	1.93E-11		6,01E-07
97	EFF	(իրի)	25	390	4	1600	120	220	200	60	2	
	1-Sep-99	(g/s)	0.0001	0,0022	0,0000	0,0090	0,0007	0.0012	0.0011	0,0003	-0,0000 ° .	
i		Max Conc.	0,001	0.010	0,000	0.042	0.003	0.006	0.005	0.002	0,000	
		ECR	3,88E-09	2.05E-08			•	- 4.51E-07	<sup>-</sup> - '	2.57E-11		4.76E-07
98	EPP	(իրի)	63	1700	9	3300	260	180	99	61	9	
	14-Oct-99	(g/s)	0 0004	0.0095	0,0001	0.0185	0.0015	0.0010	_ 0.0006	0,0003	0.0001	
!		Max Conc	0,002	0.045	0.000	0.087	0.007	0.005	0.003	0,002	0.000	
1		ECR	9.78E-09	8 94E-08			·	3.69E-07		2.62E-11		4.68E-07
าา	EFF	(բրի)	16	390	14	1400	76	200	97	32-	14	
	22-Nov-99	(g/s)	0,0001	0.0022	0,0001	0,0078	0,0004	0.0011	0.0005	0,0002	0.0001	
		Max,Conc	0.000	0.010	0.000	0.037	0.002	0.005	0,003	0,001	0,000	
		ECR	2 48E-09	2.05E-08				4.10E-07		1.37E-11		4 33E-07
100	ELL	(ինի)	38	520	14	1500	95	200	66	.32	14	i
	13-Dec-99	(g/s)	0,0002	0.0029	0,0001	0,0084	0.0005	0.0011	0.0004	0,0002	0,0001	
	ı	Max Conc	100,0	0.014	0,000	0.039	0.002	0.005	0.002	100.0	0,000	
		ECR	5 90E-09	2.74E-08		~		4.10E-07		1.37E-11		4.44E-07
101	EFF	(pph)	57	440	18	1100	68	94	110	29	18	
	3-,lan-00	(g/s)	0,0003	0.0025	0,0001	0.0062	0,0004	0.0005	0.0006	0.0002	0,0001	
		Max.Conc	0,001	0.012	0.000	0.029	0.002	0.002	0.003	0.001	0,000	
ļ		ECR	8 84E-09	2.31E-08	[	<del></del> -		1.93E-07		1.24E-11		2.25E-07
102	EFF	(pph)	8	220	R	740	55	91	29	17	8	
	7-Feb-00	(g/s)	0,000	0.0012	0,0000	0,0041	0.0003	0.0005	0.0002	0,0001	0.0000	
l		Max Conc	0,000	0,006	0,000	0.019	0,001	0,002	0.001	0,000	0,000	
		ECR	1 29E-09	1.16E-08		-	·=	1,87E-07		7.29E-12		2.00E-07

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Table 15
Summary of Air Dispersion Calculations
Wayne Reclamation and Recycling
Columbia City, Indiana

			Chemicals														
Scenario			Tatana blanca athan a	Tetrachloroethene Trichloroethene [1,1-Dichloroethene cis-1,2-Dichloroethene trans-1,2-Dichloroethene Vinyl Chloride [1,1,1-Trichloroethane [1,1-Dichloroethane Toluene													
No.	Description	Input / Output	Carcinogen	Carcinogen	Non-Carcinogen	Non-Carcinogen	Non-Carcinogen	Carcinopen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Cancer Risk					
103	EFF	(pph)	88	400	9	1200	46	61	89	25	9	- Killian					
	15-Mar-00	(g/s)	0,0005	0.0022	0,0001	0.0067	0,0003	0.0003	0,0005	0,0001	0.0001						
		Max Conc	0.002	0,011	0.000	0.032	0.001	0.002	0,002	0,001	0.000						
		ECR	1 37E-08	2.10E-08	1 11/1/1/	= 15.17,12	(/ (//)	1.25E-07	0.3002	1.07E-11	UMA	1 60E-07					
104	EFF	(pph)	21	300	3	2,300	83	260	47	31	3	1 0002-07					
	25-Apr-00	(g/s)	0,0001	0.0017	0,000	0.0129	0.0005	0.0015	0,0003	0.0002	0,000						
		Max Conc	0,001	0,008	0.000	0.060	0.002	0.007	100,0	0.001	0,000						
		F.C.B	3.26E-09	1.58E-08	""	U.Mar	0,002	5.33E-07	0,001	1.33E-11	17,5567	5.52E-07					
105	EFF	(pph)	110	440	12	1000	71	130	150	30	12	3.326-07					
	24-May-00	(g/s)	0,0006	0,0025	0.0001	0,0056	0.0004	0.0007	0.0008	0,0002	0,0001	1					
	2,	Max Conc	0,003	0.012	0.000	0.026	0.002	0.003	0,004	0,001	0.000						
		ECR	1.71E-08	2.31E-08	]	0,020	11.1102	2.67E-07	U,(ne	1.29E-11	171(8)	3,07E-07					
106	EFF	(pph)	30	380	2	1800	85	190	110	27	2	3,076-07					
	6-Jun-00	(g/s)	0,0002	0.0021	0,0000	0.0101	0,0005	0.0011	0,0006	0.0002	0,0000						
		Max Conc.	0,001	0.010	0,000	0.047	0.002	0,005	0.003	0,001	0.000	-					
ļ		ECR	4,66E-09	2.00E-08	. 0,000	17,1147	0.002	3.90E-07	0.003	1.16E-11	(7,000)	4.14E-07					
107	EFF	(pph)	31	290	10	1400	39	190	80	21	10	4.146-07					
	25-Jul-00	(g/s)	0.0002	0,0016	0,0001	0.0078	0,0002	0.0011	0,0004	0,0001	0.0001	1					
ļ	2 3,411	Max Conc	0.001	0.008	0.000	0.037	0.001	0.005	0,002	0.001	0.000						
		ECR	4.81E-09	1.53E-08	(**************************************	17,17,17	0,000	3 90E-07	17,1872	9.00E-12	(7((4)	4 10E-07					
201	FIT	(pph)	56	840	12	2200	100	230	59	30	12	4 1145-417					
	4-Aug-00	(g/s)	0.0003	0,0047	0,0001	0,0123	0,0006	0,0013	0,0003	0,0002	0,0001	ł					
		Max Conc	0.001	0.022	0.000	0,058	0.003	0.006	0,002	0.001	0.000						
		ECR	8 69E-09	4 42E-08	17 (7,17)	0,0,0	17 101,7	4.72E-07	0,002	1.29E-11	- 0,100	5.25E-07					
100	FFF	(pph)	22	540	12	2100	140	210	80	34	12	(1.2.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1					
	5-Sep-00	(p/s)	0.0001	0,0030	0.0001	0,0118	0.0008	0,0012	0,0004	0.0002	0,0001	-					
		Max Conc	0.001	0.014	0,000	0.055	0.004	0.006	0,002	0.001	0,000	1					
		ECR	3,41E-09	2.84E-08		0.02.5	0.00	4.31E-07	0,002	1.46E-11	V.,,,,,,,,	4.63E-07					
110	EFF	(pph)	52	920	18	2200	160	130	93	49	18	430,0527					
.,	6-Oct-00	(p/s)	0.0003	0.0052	0.000.0	0.0123	0.0009	0.0007	0,0005	0,0003	0.0001	j					
	11-1 7 1-17	Max Conc	0,001	0.024	0,000	0.058	0.004	0.003	0.002	0,001	0.000						
		ECR	8,07E-09	4.84E-08	V.JAA	0.056		2.67E-07	0.002	2.10E-11	(),()()	3.23E-07					
111	EFF	(pph)	110	840	10	1900	97	170	73	36	10	3.2.00-07					
· ' '	7-Nov-00	(g/s)	0.0006	0,0047	0,0001	Q0106	0.0005	0.0010	0.0004	0,0002	0,0001	}					
	( -) -(IV SIR)	Max.Conc	0.003	0.022	0.000	0.050	0.003	0,004	0,002	0.001	0,000	-					
		ECR	1.71E-08	4.42E-08	V.,AA,	0,030	17.1703	3.49E-07	0.002	1.54E-11	",	4.10E-07					
112	EFF	(ppb)	38	760	9	1900	100	190	50	30	9	9.1111.2417					
'''	21-Dec-00		0.0002	0.0043	0,0001	0,0106	0.0006	0,0011	0.0003	0,0002	0.0001	}					
	21-12CC-1H)	(g/s)	0.002	0,0043	0,000	0.050	0.00 <u>0</u> 0.003	0.005	0.001	0.001	0.0001						
		Max.Conc ECR	5.90E-09	4 00E-08	U.1AN/	0,020	OURIS	3,90E-07	U.WI	1.29E-11	U,URA)	4.36E-07					

Table 15
Summary of Air Dispersion Calculations
Wayne Reclamation and Recycling
Columbia City, Indiana

							Chemicals					Cumulative
Scenario		Input/	Tetrachloroethene	Trichloroethene	1.1-Dichloroethene	cis-1,2-Dichloroethene	trans-1,2-Dichloroethene	Vinyl Chloride	1,1,1-Trichloroethane	1,1-Dichloroethane	Toluene	Cancer
No.	Description	Output	Carcinogen	Carcinogen	Non-Carcinogen	Non-Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Risk
113	EFF	(իրի)	38	630	9	2000	49	270	53	30	9	
	30-Jan-01	(g/s)	0,0002	0,0035	0,0001	0,0112	0.0003	0,0015	0,0003	0.0002	0.0001	
		Max Conc	0.001	0.017	0.000	0.053	0.001	0,007	9,001	0.001	0,000	·
		ECR	5.90E-09	3.31E-08	-		_	5.54E-07		1.29E-11		_ 5.93E-07
114	EFF	(pph)	140	260	140	1700	1	180	140	140	140	
	26-Feb-01	(g/s)	0.0008	0,0015	0.0008	0,0005	.0.0000	0,0010	0.0008	0,0008	0.0008	]
		Max Conc	0,004	0.007	0,004	0.045	0,000 **	0.005	0,004	0.004	0,004	1
		ECR	2.17E-08	1.37E-08	,			3.69E-07		6.00E-11	1	4.05E-07
115	EFF	(pph)	34	340	2	1300	1	190	26	18	4	<u> </u>
	21-Mar-01	(g/s)	0,0002	0,0019	0.0000	0.0073	0.0000	0,0011	0,0001	0,0001	0.0000	!
		Max Conc	0.001	0,009	0.000	0,034	0,000	0,005	0,001	0,000	0.000	
		ECR	5 28E-09	1.79E-08				3.90E-07		7.72E-12		4.13E-07
116	EFF	(իրի)	140	160	140	1000	1	160	140	140	140	
1	23-Apr-01	(g/s)	0,0008	0.0009	0,0008	0.0056	0.0000	0.0009	0.0008	0,0008	0,0008	
		Max Conc	0.004	0,004	0,004	-0.7026	0,000	0,004	0 004	0,004	0.004	
		ECR	2.17E-08	8.42E-09		-		3.28E-07		6.00E-11		3.58E-07
117	EFF	(pph)	150	150	150	630 -	1	150	150	150	150	
	21-May-01	(g/s)	0,0008	0,0008	0.0008	0.0035	0.0000	0,0008	0.0008	0,0008	70.0008	
		Max.Conc	0,004	0,004	0.004	0.017	0.000	0,004	0,004	0,004	0.004	-
		ECR	2 33E-08	7.89E-09		-		3.08E-07		6.43E-11		3.39E-07
118	EFF	(իրի)	150	430	150	1400	1	210	150	150	150	
	13-hm-01	(g/s)	0,0008	0,0024	0,0008	0,0078	0,0000	0.0012	0.0008	0.0008	0.0008	•
		Max.Conc.	0,004	0,011	0.004	0,037	0,000	0,006	ბ,004	0,004	0.004	•
		ECR	2.33E-08	2.26E-08				4.31E-07		6.43E-11	<u> </u>	4 77E-07
110	EFF	(pph)	140	140	140	1100	. 1	140	140	1407 _	140	
	23-Jul-01	(g/s)	0,0008	0,0008	0.0008	0,0062	0,000	0,0008	8000,0	0.0008	0,0008	_
į		Max.Conc.	0,004	0.004	0,004	0.029	0,000	0,004	0,004	0,004	0.004	-
l		f:CR	2 17E-08	7.36E-09				2.87E-07		6,00E-11		3.16E-07
120	EFF	(pph)	140	280	140	600	1	140	140	140	140	
	23-Aug-01	(g/s)	0,0008	0.0016	0,0008	0.0034	0,000	0,0008	0,0008	0,0008	0.0008	}
		Max.Conc	0.004	0,007	0.004	0,016	0.000	0,004	0,004	0.004	0,004	1
		ECR	2 17E-08	1,47E-08				2.87E-07		6.00E-11	-	3.24E-07
121	EFF	(pph)	140	280	140	680	1	140	140	140	140	· · · · · · · · · · · · · · · · · · ·
ļ	17-Sep-01	(g/s)	0,0008	0,0016	0.0008	0,0038	0,000	0.0008	0,0008	0,0008	0,0008	
ļ	,	Max Conc.	0,004	0,007	0.004	0.018	0,000	0.004	0,004	0,004	0,004	
		ECR	2 17E-08	1.47E-08			· =	2.87E-07		6.00E-11		3.24E-07
122	EFF	(pph)	140	410	140	1500	140	260	140	140	140	
	31-Oct-01	(g/s)	0,0008	0,0023	0,0008	0.0084	0,0008	0,0015	0,0008	0,0008	0.0008	
}	, , . , , . ,	Max.Conc.	0,004	0.011	0.004	0.039	0,004	0.007	0.004	0.004	0,004	
		ECR	2.17E-08	2.16E-08			V.S.Y. 1	5.33E-07		6.00E-11		5.77€-07

Phobe 1869 Waves RR 01 - CLA Districted A. Reports Property Reports property Schily Dec 2002/table/table (Sair dispicale 94) 2001

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Table 15
Summary of Air Dispersion Calculations
Wayne Reclamation and Recycling
Columbia City, Indiana

				Chemicals												
Scenario	Description	Input / Output	Tetrachloroethene	Toluene	Cumulative Cancer											
No.			Carcinogen	Carcinogen	Non-Carcinogen	Non-Carcinogen	Non-Carcinogen	Vinyl Chloride Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Risk				
123	EFF	(ppb)	100	460	100	2200	100	210	100	100	100					
	18-Nov-01	(g/s)	0,0006	0.0026	0.0006	0,0123	0.0006	0.0012	0,0006	0,0006	0,0006					
		Max Conc.	0,003	0.012	0,003	0.058	0,003	0,006	0,003	0.003	0,003					
		ECR	1.55E-08	2.42E-08				4.31E-07		4.29E-11		4.71E-07				
124	EFF	(bbp)	130	300	130	1700	1	210	130	130	130					
	28-Dec-01	(g/s)	0.0007	0.0017	0.0007	0.0095	0,0000	0,0012	0,0007	0.0007	0,0007	1				
		Max Conc	0.003	0,008	0.003	0,045	0.000	0.006	0,003	0.003	0,003	}				
		F:CR	2.02E-08	1.58E-08				4.31E-07		5.57E-11		4.67E-07				
125	1:1-F	(իրի)	130	280	130	1600	1	280	130	130	130					
	18. fan-02	(p/s)	0.0007	0.0016	0,0007	0,0090	0.0000	0,0016	0,0007	0,0007	0,0007					
		Max Conc	0.003	0,007	0.003	0,042	0.000	0,007	0.003	0.003	0,003					
		ECR	2.02E-08	1 47E-08				5.74E-07		5.57E-11		6.09E-07				
126	EFF	(pph)	130	530	130	2800	<del></del>	500	130	130	130					
	7.Ech.02	(g/s)	0,0007	0.0030	0.0007	0.0157	0,000	0.0028	0,0007	0.0007	0.0007	}				
		Max.Conc.	0.003	0,014	0.003	0.074	0.000	0,013	0,003	0.003	0,003					
		ECR	2 02E-08	2.79E-08		******	, in the second	1.03E-06	1,,,,,,,	5.57E-11		1.07E-06				
127	EFF	(իրի)	140	180	140	900	<del> </del>	160	140	140	140	7,07,0				
-	21-Mar-02	(g/s)	8,000.0	0.0010	0,0008	0,0050	0,0000	0,0009	0,0008	0.0008	0.0008					
	22	Max Conc	0.004	0.005	0.004	0.024	0,000	0,004	0,004	0,004	0.004					
		I·( R	2.176-08	9.47E-09		11,112		3.28E-07	11,000	6,00E-11	,,,,,,	3.59E-07				
128	PLL.	(bbp)	8	29	<u> </u>	37	1	1	42	4	1	7.377.407				
	23-Apr 02	(g/s)	0.0000	0,0002	0.0000	0.0002	0,000	0.0000	0,0002	0.0000	0.0000					
		Max Conc	0,000	0.001	0.000	0,001	0.000	0,000	0.001	0,000	0,000					
		ECR	1 21E-09	1.53E-09	(1186)	1,,,,,,	11.1007	2.05E-09	0.071	1.50E-12	- (),(,,,,,,	4,79E-09				
120	EFF	(hhy)	140	160	140	800	<u> </u>	150	140	140	140	4,796-07				
127	23-May-02	(g/s)	0,0008	0.0009	0.0008	0,0045	0.000	0,0008	0.0008	0,0008	0.0008					
1	2 V-K131y-112	Max.Conc	0,004	0.004	0.004	0.021	0,000	0.004	0,004	0,004	0,004	-				
į		ECR	2.17E-08	8.42E-09	1711114	0.021	OARA	3.08E-07	0,004	6.00E-11	11,1774	3.38E-07				
130	EFF		140	290	140	1200	1	220	140	140	140	3.380-07				
' '''		(hhp)	0,0008	0.0016	0,0008	0,0067	0.000	0.0012	0.0008	- 0,0008	0,0008					
	18-Jun-02	(g/s)	0,004	0,008	0.000x	0.032	0,000	0.006	0.004	0,004	0,004					
}		Max.Conc	l		0 (8)4	0.052	U,UAU	1	- · · ·	6,00 <u>6-</u> 6,00 <u>6-</u> 11	17,17,74	4,88E-07				
		ECR	2 17E-08 140	1.53E-08 140	140	320		4.51E-07	140	140	140	4,00C-07				
131	EFF	(ինի)	3	i		230	1			_						
ĺ	19-Jul-02	(g/s)	0,0008	0.0008	8000.0	0.0013	0.0000	0.0008	0.0008	0.0008	0.0008					
		Max Conc	0,004	0.004	0,004	0,006	0.000	0,004	0.004	0.004	0.004					
		ECR	2.17E-08	7.36E-09			<del></del> -	2.87E-07		6.00E-11		3.16E-07				
1,32	EFF	(bbp)	140	200	140	920	1	220	140	140	140					
	14-Aug-02	(g/s)	0,0008	0.0011	0.0008	0.0052	0.000	0,0012	8000.0	0.0008	0.0008					
		Max.Conc.	0,004	0.005	. 0,004	0.024	0.000	0.006_	0,004	0,004	0.004					
		ECR	2.17E-08	1.05E-08				4.51E-07		6,00E-11		4.84E-07				

# Table 15 Summary of Air Dispersion Calculations Wayne Reclamation and Recycling Columbia City, Indiana

ì							Chemicals	_				Cumulative
Scenario		Input /	Tetrachloroethene	Trichloroethene	1.1-Dichloroethene	cis-1.2-Dichloroethene	trans-1,2-Dichlornethene	Vinyl Chloride	1,1,1-Trichioroethane	1,1-Dichloroethane	Toluene	Cancer
No.	Description	Output	Carcinogen	Carcinogen	Non-Carcinogen	Non-Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Carcinogen	Non-Carcinogen	Risk
111	EFF	(ինի)	100	520	100	1500	1	100	100	100	100	
	20-Sep-02	(g/s)	0,0006	0.0029	0,0006	0.0084	0.000	0.0006	0,0006	0.0006	0.0006	1
		Max Conc.	0,003	0.014	0.003	0.039	0,000	0.003	0.003	0.003_	0.003	
		F.C'R	1.55E-08	2 74E-08				2.05E-07		4.29E-LI		_ 2.48E-07
134	FFF	(իրի)	140	720	140	1300	= <u>1</u>	140	140	140	140	
	24-Oct-02	(g/s)	8000,0	0.0040	0,0008	0.0073	0.0000	0.0008	0.0008	0,0008	8000,0	_
		Max.Conc	0,004	0.019	0.004	0.034	0.000	0.004	0,004	0.004	0.004	
[		ECR	2 17E-08	3.79E-08		•		2.87E-07		6,00E-11	-	3.47E-07
135	EFF	(րրի)	140	720	140	1200	1	140	140	140	140	
	21-Nov-02	(g/s)	0.0008	0,0040	8000,0	0,0067	0.0000	0 0008	0,0008	0,0008	0,0008	_
1		Max.Conc	0.004	0.019	0.004	0.032	0.000	0.004	0,004	0,004	0,004	{
		ECR	2.17E-08	3 79E-08				2.87E-07		6.00E-11		3.47E-07
136	EFF	(pph)	140	410	140	1100	1	140	140	140	140	
}	13-Dec-02	(g/s)	0,0008	0.0023	0,0008	0,0062	0,0000	8000,0	0,0008	0,0008	0.0008	
ĺ		Max.Conc	0,004	0.011	0.004	- 0-029	0,000	0,004	0.004	0,004	0.804	1
		ECR	2.17E-08	2.16E-08	•	•-		2.87E-07		6.00E-11	•	3.31E-07

#### Notes:

g/s = Parts per hillion (pph) x 1,000 / (22,500 x 2 205 x 3,600).

Max. Conc. - The maximum predicted concentration (µg/m<sup>3</sup>) from ISC-LT2 model run output,

FCR = Excess Cancer Risk = Maximum concentration (Max Conc.) (micrograms per meters cubed [µg/m³]) x Unit Risk Factor,

Unit Risk Factors

Vinyl Chloride 7,80E-05
1,1 Dichloroethane 163E-08
Trichloroethene 2 00E-06
Tetrachloroethene 5 90E-06

g s = (micrograms per liter Jug I ft \*0.1346/kfW

Assume MW 113

es (ng4 ) \* 1,012 x 10 3

IN Sample collected from air treatment system influent

111 - Sample collected from air treatment system effluent

1. jobe 1878 Wyrne RR (i). () Active geoff. Reports Progress Reports progress fully Dec 2002 tables tables (air disperals 1881) figs ) vls. 4.4 (2001)

Table 16

VOC Removal Rates - SVE and Air Stripper Systems

Wayne Reclamation and Recycling

Columbia City, Indiana

									Air Stripper <sup>(4)</sup>					
	SE Are	ea SVE Sys		AST Area -			AST Area -			Groundwater	IN - EFF			Sum of VOCs
Date/Constituent	Air Flow Rate <sup>(5)</sup> (sefm)	(pph)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc (ppb)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc. (pph)	Removal Rate (lbs/day)	Flow Rate (gpm)	Conc. (µg/L)	Removal Rate (lbs/day)		Removed (lbs/day)
October 2002 - TCF	1,200	430	0.25	280	180	0 02	(susp)	0	0.00	44	300	0.16		0.43
October 2002 - 1,2-DCT	1,200	790	0.37	280	0	0.00	(susp)	0	0.00	44	1,359	0.72		1.09
October 2002 - VC	1,200	n	0.00	280	0	0.00	(susp)	0	0.00	44	220	0.12		0.12
Total			0.62			0,02	_		0,00			0 99	Total	1.64
Appl 2002 - TCE	2,600	330	0.41	245	22	0.00	245	48	0.01	65	74	0.06		0.48
April 2002 - 1,2-DCF	2,600	370	0.38	245	27	0.00	245	60	0.01	65	692	0.54		0.93
April 2002 - VC	2,600	18	0.01	245	0.92	0.00	245	2.1	0.00	65	160	0.12		0.14
Total			0.80			0.01			0.01		_	0.72	Total	1.54
Oct/Nov 2001 - TCE	1,600	410	0.32	225	150	0.02	225	0	0.00	90	241	0.26		0.59
Oct.Nov. 5001 - 1'S DCF	1,600	1,500	0.94	225	130	0.01	225	0	0.00	90	1447	1.56		2.52
Oct Nov 2001 - VC	1,600	0	0.00	225	1	0.00	225	n	0.00	90	121	0.13		0.13
Totat			1 26			0.03			0.00			1.96	Total	3.24
April 2001 - ICF	1,600	140	0.11	105	57	0,00	120	48	0.00	65	190	0.15		0.26
April 2001 - 1,2-DCT-	1,600	150	0.09	105	21	0.00	120	70	0.00	6,5	1230	0.96		1.06
April 2001 - VC	1,600	ø	0,00	105	0	0.00	120	0	0.00	65	146	0.11		0.11
Total			0.20			0.00			0.01			1.22	Total	1.44
October 2000 - TCF,	1,500	750	0.54	187	710	0.06	213	78	0.01	55	120	0.08		0.69
October 2000 - 1,2-DCE	1,500	1,300	0.77	187	300	0.02	213	190	0.02	55	1580	1.04		1.85
October 2000 - VC	1,500	n	0.00	187	0	0.00	213	0	0.00	55	170	0.11		0.11
Total			1.31		_	0,09			0.02			1.24	Total	2.65
April 2000 - TCE	1,500	710	0.51	187	590	0.05	213	50	0.01	51	250	0.15	•	0.73
April 2000 - 1,2-DCE	1,500	1,400	0.82	187	330	0.02	213	150	0.01	51	1450	0.89		1.75
April 2000 - VC	1,500	0	0.00	187	0	0.00	213	0	0.00	51	170	0.10		0.10
Total			1.34			0.08			0.02			1.15	Total	2.58

Table 16

VOC Removal Rates - SVE and Air Stripper Systems

Wayne Reclamation and Recycling

Columbia City, Indiana

<u>-</u>					_						Air Stripper	(4)		
	SE Area	SVE Sys	stem <sup>(1)</sup>	AST Area -	SVE Bran	ich Line G <sup>(2)</sup>	AST Area	- SVE Brai	nch Line H <sup>(3)</sup>	Groundwater	IN - EFF			Sum of VOCs
Date/Constituent	Air Flow Rate <sup>(4)</sup> (scfm)	Conc. (pph)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc. (pph)	Removal Rate (lbs/day)	Air Flow Rate (scfm)	Conc. (ppb)	Removal Rate (lbs/day)	Flow Rate (gpm)	Conc. (μg/Ļ)	Removal Rate (lbs/day)		Removed (lbs/day)
Nov. Dec 1999 - 1CF	2,590	540	0,68	187	9	0.00	213	23	0.00	47	120	0.07		0.75
Nov Dec 1999 - 1,2-DCE	2,590	1300	1.32	187	24	0.00	213	89	0.01	47	888	0.50		1,83
Nov Dec 1999 - VC	2,590	29	0.02	187	4	0.00	213	n	0.00	47	120	0.07		0. <del>0</del> 9
Total			2.01			0.00			0.01			0.64	Total	2.66
April 1999 - 1CT-	2,730	94	0.12	98	R	0.00	112	21	0.00	71	254	0.22		0.34
April 1999 - 1,2-DCE	2,730	210	0.23	98	21	0.00	112	47	0.00	71	1,560	1.33		1.56
April 1999 - VC	2,730	15	0.01	98	2	0.00	112	2	0.00	71	210	0.18		0.19
Total			0.36		*>	0.00			0.00	•		1.73	Total	2.09
					-		FE		· ·			-		•••
October 1998 - TCI:	2,575	2900	3.60	140	48	0.00	160	300	0.02	56	8.3	0.06		3.69
October 1998 - 1,2-DCE	2,575	3500	3 54	140	50	0.00	160	250	0.02	56	254	0.17		3 73
Detober 1998 - VC	2,575	0	0.00	140	0	0.00	160	0	0.00	56	110	0.07		0.07
Total			7 14		_	0.01	· •.	٠.	0.04			0.30	Ţotal	7.49
April 1998 - TCF	1,350	540	0.35	140	57	0.00	160	100	0.01	30	[40	0.05		0.41
April 1998 - 1,2-DCF	1,350	1000	0.53	140	110	0.01	160	200	0.01	30	1,190	0.43		0.98
April 1998 - VC	1,350	n	0.00	140	7	0.00	160	0	0.00	.30	240	0.09		0.09
Total			0.88			0.01			0.02			0.57	Total	1.48

<sup>&</sup>quot;Volatule organic compound (VOC) removal rate based on air flow rate and VOC concentrations measured in combined Southeast (SE) Area soil vapor extraction (SVE) line

<sup>\*\*</sup> VOC removal rate based on air flow rate and VOC concentrations measured in Aboveground Storage Tank (AST) Area Branch Line G

<sup>&</sup>quot;VOC removal rate based on air flow rate and VOC concentrations measured in AST Area Branch Line H.

OC removal rate based on groundwater flow rate and difference between groundwater influent and effluent concentrations.

<sup>25</sup> ST. Area air flow rate based on sum of the six branch line field measurements.

IN Influent, EFF = effluent; Conc. = concentration, sofm = standard cubic feet per minute; ppb = parts per billion; µg/L = micrograms per liter; lbs = pounds; gpm = gallons per minute.

TCE: Trichloroethene; DCE = dichloroethene; VC = vinyl chloride.

<sup>(</sup>susp) The operation of Branch Line H was suspended in October 2002.

**Figures** 





FIGURE 2

**●** MWH



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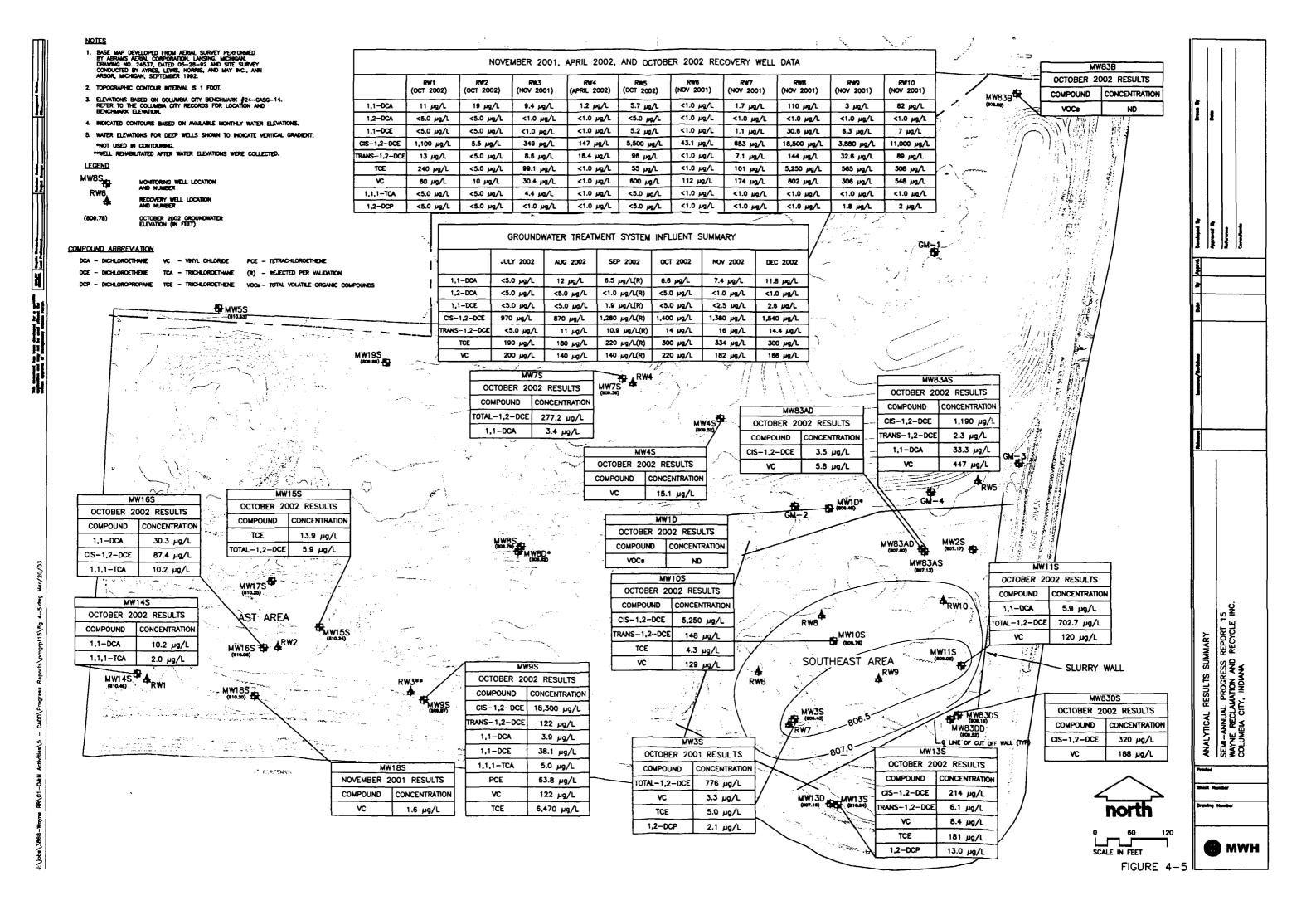


Figure 5
Summary of Air Treatment System Effluent Data
Wayne Reclamation and Recycling
Columbia City, Indiana

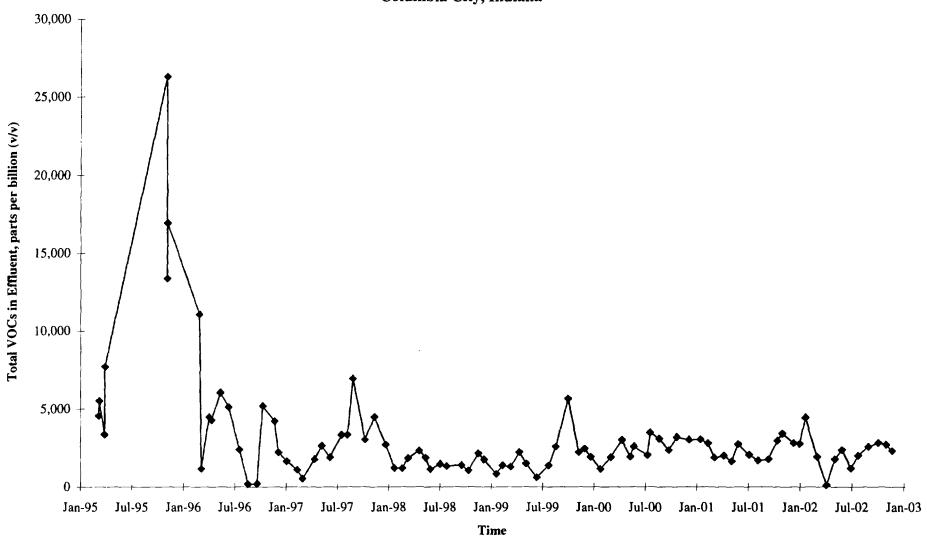


Figure 6
Summary of Groundwater Treatment System Influent Data
Wayne Reclamation and Recycling
Columbia City, Indiana

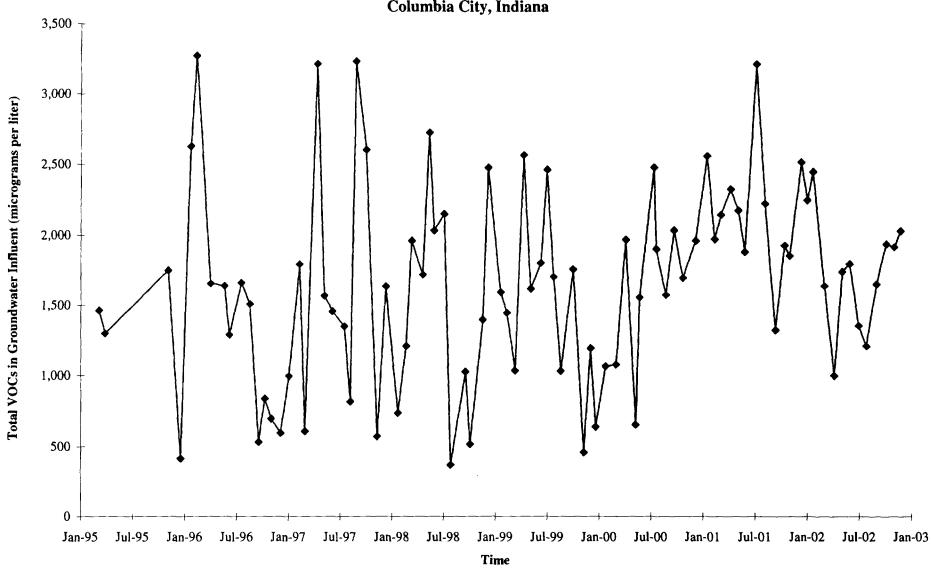


Figure 7
Summary of Site Volatile Organic Compound Removal Rates
Soil and Groundwater Remediation Systems
Wayne Reclamation and Recycling
Columbia City Indiana

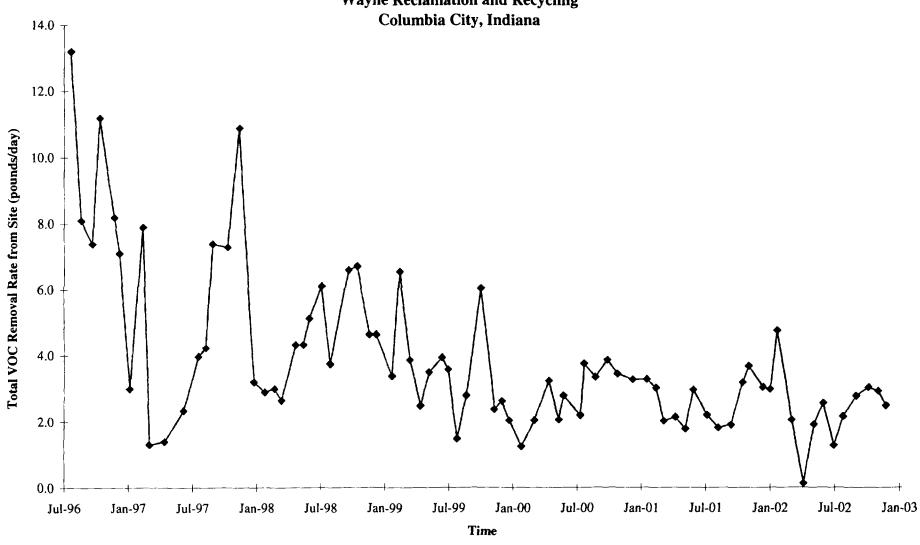


Figure 8
Cumulative Volatile Organic Compounds Removed From Site
Soil and Groundwater Remediation Systems
Wayne Reclamation and Recycling
Columbia City, Indiana

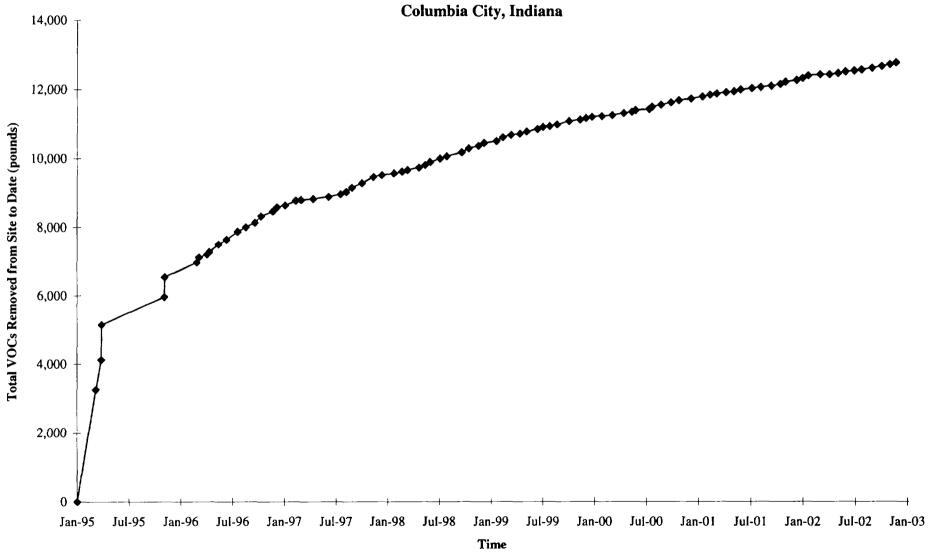


Figure 9
Effect of Air Sparge on SVE Volatile Organic Compound Concentrations, Southeast Area
Wayne Reclamation and Recycling
Columbia City, Indiana

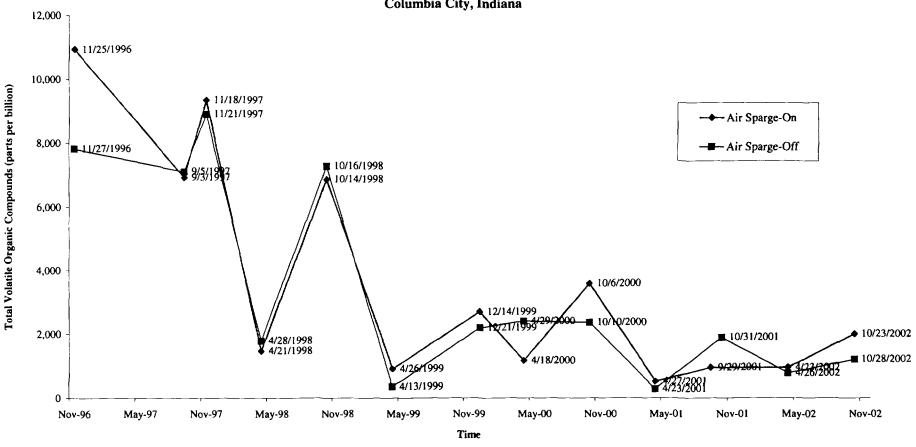
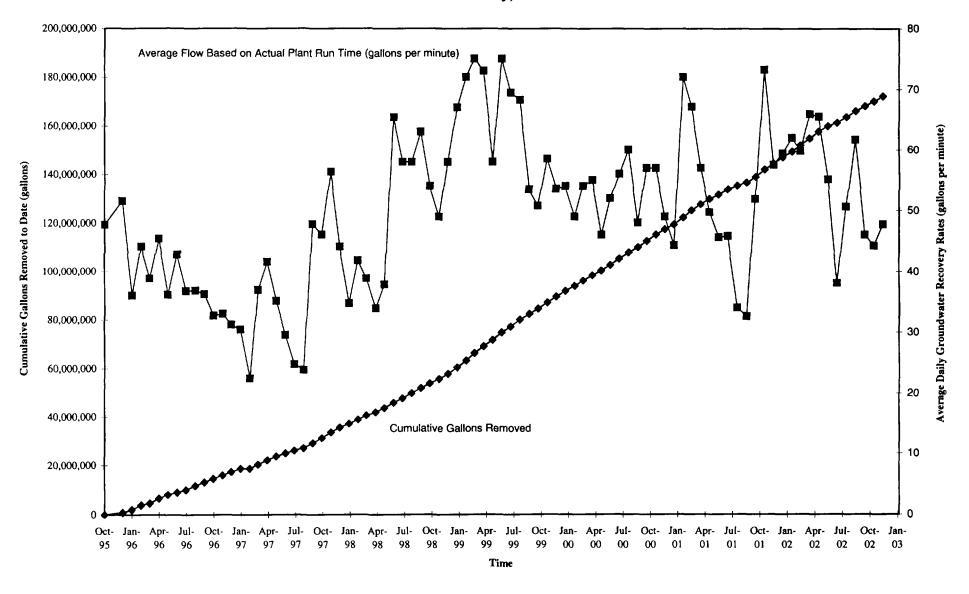


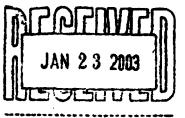
Figure 10
Cumulative and Sustained Groundwater Recovery
Wayne Reclamation and Recycling
Columbia City, Indiana



### Appendix A







Burgess & Niple, Limited

5085 Reed Road Columbus, OH 43220 614 459.2050 Fax 614 451.1385

#### LETTER OF TRANSMITTAL

DATE: January 17, 2003

JOB NO.: 31560

TO: Mr. Dan Forlastro

Engineering Management, Inc. 1500 Ardmore Blvd., Suite 502 Pittsburgh, PA 15221-4468

RE: City of Columbia City, IN
Wayne Reclamation & Recycling Facility
October 2002 Groundwater Sampling Event

	tsburgh, PA 15	•	_			
WE AR	E SENDING	YOU:	X Attached	Under sepa	arate cover via	the following items:
	nop drawings	☐ Prints	ge order	☐ Plans	☐ Samples	☐ Specifications
COPIES	DATE	NO.			DESCRIPTION	
1	12/4/02		Summary letter	r of October 15, 2	2002 groundwater samp	ling event
			· · · · · · · · · · · · · · · · · · ·			
			,	·		
THESE	ARE TRAN	SMITTED	:			
[ <u>X</u>	For Approval For your use As requested For review ar	i	Approved Approved	as submitted as noted for correction	Submit	copies for approval copies for distribution corrected prints
REMAR	KS: Attache	d is a copy	of the report y	ou requested.		
					_	/
					All Sy	1
COPY T	O: Jeffrey Wa	alker, Shari l	Hinds	SIGNED:	Michael E. Leone	l'ou



#### **BURGESS & NIPLE**

Mr. Jeffrey P. Walker Outside Operations Manager City of Columbia City 112 S. Chauncey Street Columbia City, IN 46725 Re: City of Columbia City
Wayne Reclamation & Recycling Facility
October 2002 Groundwater Sampling Event

December 4, 2002

Burgess & Niple, Limited

5085 Reed Road Columbus, OH 43220 614 459.2050 Fax 614 451.1385 Dear Mr. Walker:

Burgess & Niple, Limited (B&N) has completed this report to provide you with additional information that is not included in the formal report submitted to the U.S. Environmental Protection Agency (EPA), as required by the facility's Operation and Maintenance Sampling and Analysis Plan (OMSAP) (Geraghty & Miller, Inc., October 1993). B&N completed groundwater sampling and analysis of four monitoring wells located at the Wayne Reclamation and Recycling Facility (WRRF) in the City of Columbia City, Indiana on October 15, 2002. The following sections summarize the results of the most recent sampling event. Figure 1 displays the groundwater monitoring network. Attachment 1 includes the field-sampling sheets and chain-of-custody form completed during the most recent sampling event. Attachment 2 contains the analytical laboratory report submitted by American Analytical Laboratories, Inc. (AAL). The time-versus-concentration plots generated from the groundwater quality data are presented in Attachment 3.

#### **METHODS**

Prior to sampling any of the wells, depth-to-water measurements were recorded using an electronic water-level measuring tape. The depth to the bottom of each well was also measured. Measurements were made to the nearest 0.01 foot and recorded on field sampling sheets. The well stick-up was measured to the nearest 0.1 foot and recorded.

Field-sampling personnel completed a wellhead inspection of each well documenting any evidence of activity near the well, the condition of the protective casing, any insect or rodent intrusions, or other notable conditions.

Disposable polyethylene bailers were used to purge each well of a minimum of five well volumes prior to sampling. Field parameters (pH, specific conductance, temperature, and turbidity) were measured and recorded during well purging. Sampling began once at least five well volumes were removed and the field parameters stabilized (within ±10 percent). Purge water was disposed of on the ground away from each well, as specified by the facility's OMSAP (Geraghty & Miller, Inc., October 1993).

Groundwater samples were collected from the four monitoring wells (GM-1, GM-2, GM-3, and GM-4). One duplicate was collected at GM-4 by splitting each bailer of water between two sets of sample containers. One field blank was collected to evaluate possible cross-contaminants from the field-sampling equipment. Deionized water was poured into a

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disposable bailer and transferred into the sample containers. The laboratory prepared one trip blank (two 40-milliliter [ml] vials of deionized water) and sent it along with the sample containers. Field personnel filled the sample containers and placed them in a cooler that was chilled with ice to 4 degrees Celsius (°C) or cooler. Groundwater samples were brought back to AAL for analysis.

AAL analyzed the groundwater samples from the four monitoring wells, the duplicate sample, and the equipment blank for ammonia (Method 350.1), chloride (Method 4500-CL B), chemical oxygen demand (COD) (Method 410.4), sodium (Method 6010A), and volatile organic compounds (VOCs) (Method 8260). The trip blank was analyzed for VOCs only.

#### RESULTS

Table 1 includes all historical groundwater quality results reported for the WRRF, including the results of the October 15, 2002 groundwater sampling event. VOCs included in Table 1 are only those parameters historically detected at the facility. All other VOCs have been reported below the respective laboratory detection limits.

Most of the inorganic concentrations reported for GM-1, GM-2, GM-3, and GM-4 during the most recent groundwater sampling event were within the respective range of historical results. The lowest historical concentrations for ammonia in GM-2 and for chloride in GM-4 were reported during the October 2002 sampling event.

There were no VOCs reported above the laboratory detection limits in either GM-1 or GM-2 during the October 2002 sampling event. This is consistent with historical results for these two wells. Except for trans-1,2-dichloroethene in MW-3, all detected VOCs in GM-3 and GM-4 were within the respective range of historical concentrations. The trans-1,2-dichloroethene result of 2 micrograms per liter ( $\mu$ g/l) in MW-3 reported during the October 2002 sampling event was the highest detected value for that parameter for that well. The result for cis-1,2-dichloroethene in GM-4 (180  $\mu$ g/l) was the lowest concentration since January 1996. The result for vinyl chloride in GM-4 (2  $\mu$ g/l) was lower than nine previous sampling events for that well.

Time-versus-concentration plots were constructed for ammonia, chloride, COD, sodium, and each of the historically detected VOCs. Historical results from each of the monitoring wells are included on each plot for comparative purposes. Consistently increasing trends in concentration were observed for the following parameters and wells:

Well No.	Parameter
GM-1	Ammonia
GM-3	cis-1,2-DCE
	Vinyl chloride
GM-4	1,1-DCA
	1,1-DCE
	1,1,1-TCA
	TCE

Previously included parameters on the list of consistently increasing VOC concentrations were *cis* -1,2-DCE, trans-1,2-DCE, and vinyl chloride for well GM-4. The following conclusions for well GM-4 are noted:

- Concentrations of 1,1-DCE reached a maximum value of 7.1 μg/l in October 2001.
   Since then, concentrations have decreased with the most recent reported value of 5.1 μg/l in October 2002. The U. S. EPA Maximum Contamination Level (MCL) for 1,1-DCE is 7 μg/l.
- Concentrations of cis -1,2-DCE steadily increased since January 1995, and spiked in June 2001 with a laboratory result of 570 μg/l. Since then concentrations have continued to drop with the latest concentration reported at 180 μg/l. Concentrations of cis -1,2-DCE in GM-4 are still above the MCL of 70 μg/l.
- Concentrations of trans-1,2-DCE for the October 2002 sampling event were reported at 14 μg/l. This latest reported value exemplifies the stabilization of trans-1,2-DCE in GM-4, since the historical high of 20 μg/l in October 2001. The MCL for trans-1,2-DCE is 100 μg/l.
- Vinyl chloride concentrations reached a historical high of 8 μg/l in December 2000, but have slowly decreased to the latest reported concentration of 2 μg/l in October 2002. The MCL for vinyl chloride is 2 μg/l.

Table 2 includes historical groundwater elevations and other well data recorded at the facility. Groundwater elevation data prior to December 1999 was not available. Groundwater elevations decreased between April 2002 and October 2002 from a minimum of 1.89 feet at GM-3, to a maximum of 2.63 feet at GM-2 and MW-4S.

If you have any questions, please call me at (614) 459-2050.

Sincerely,

Michael E. Leone Project Geologist

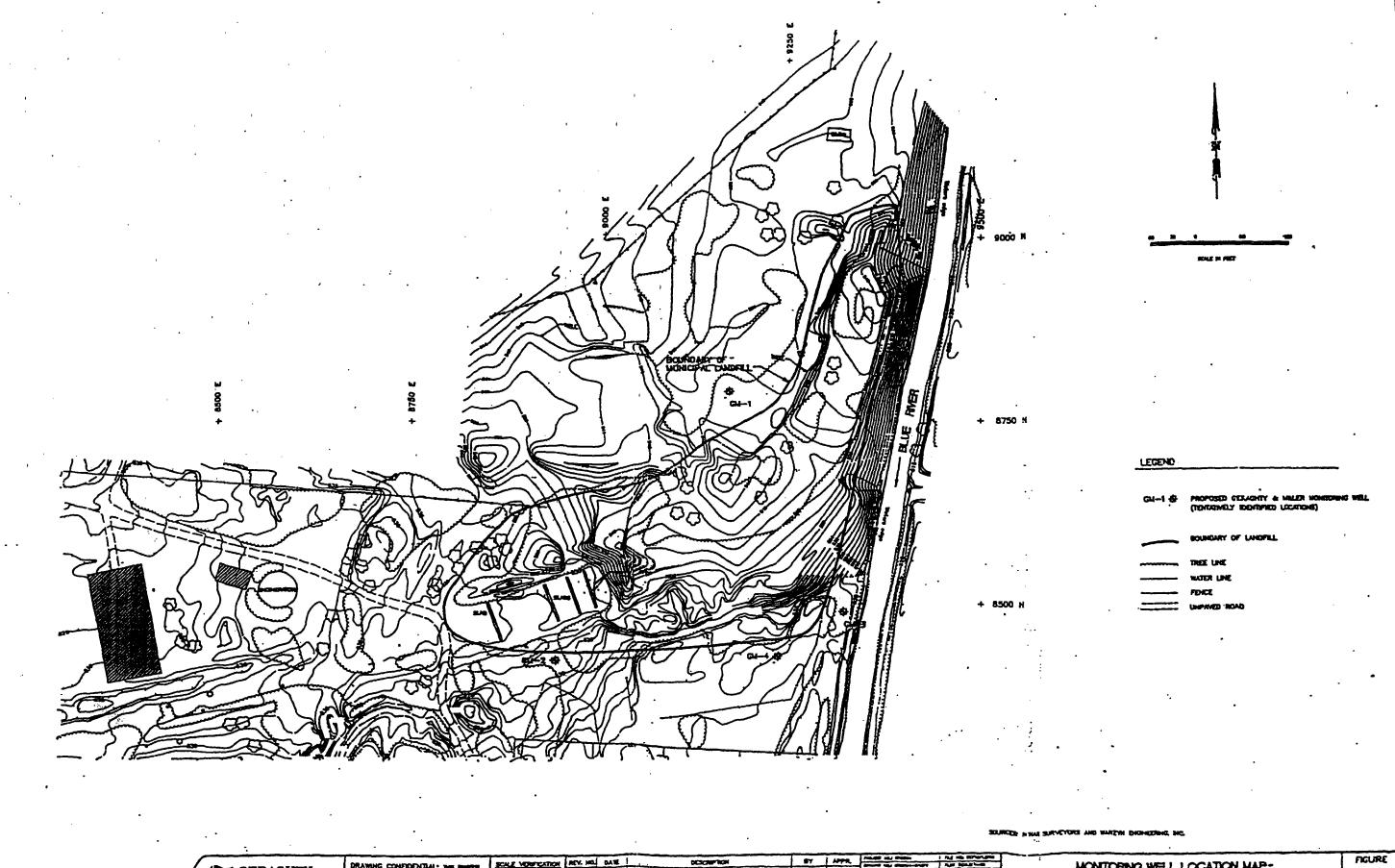
Wichard & Klene

MEL:cmc Attachments

copy: Mr. Howard Lowen, Columbia City Wastewater Superintendent (w/attachments)

Ms. Jessica Huxhold-Fliss, IDEM (w/attachments)

Ms. Shari Hinds, B&N (w/attachments)



GERAGHTY

S MILLER, INC.

Sharinamental Services

SCHE VONTCATION Set you reversible set not set the

MONTORING WELL LOCATION MAP-POST-CLOSURE LANOFILL MONITORING WAYNE RECLAMATION AND RECYCLING SITE . COLUMBIA CITY, INDIANA.

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Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	' Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics																			
Ammonia	mg/l	-	0.05	0.43	0.6	0.58	0.25	0.41	0.28	1.7	0.587	0.45	0.48	1.08	1.20	1.41	1.09	1.14	1.24
Chloride	mg/l	250 (S)	1	130	120	80	48	39	35	80	64	31	37	26	2.3	46	39	44	31
Chemical Oxygen Demand (COD)	mg/l		1	130	55	87	100	39	25	38	74	22	36	27	45	13	29	52	37
Sodium	mg/l	-	0.10	60	59	54	26	22	19	18	22.8	18	15	19.2	17.5	19.0	22.9	22.2	21.5
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l	-	1	<1.0	<1.0	<1.0	<1.0	<1'.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.(	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/l	7	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	. <5	<0'	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ug/l	70	0.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	ug/l	100	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<5.(	<5.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/l	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	ug/l	5	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/l	2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<2	<1.(	<1.0	<1.0	<1.0	<1.0
Field Parameters																			
pH	S.U.	6.5-8.5 (S)					-	-					-	6.90	7.58	6.94	7.49	7.55	7.11
Specific Conductance	umhos/cm								1				700	832	784	541	730	605	487
Temperature	οС			-								-	11.1	12.9	10.2	11.9	11.3	11.3	11.7
Turbidity	NTU	-						-		-				111	455	133	182	140	664

All other VOCs have been historically below laboratory detection limits.

<sup>1 =</sup> U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

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Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics															-				
Ammonia	mg/l		0.05	2.6	2.6	2.4	1.6	3	2.6	3	2.64	1.7	1.8	1.99	1.80	2.03	2.10	1.46	1.43
Chloride	mg/l	250 (S)	1	18	15	19	, 16	16	22	19	10	7	12	16	10	12	14	20	14
Chemical Oxygen Demand (COD)	mg/l		1	30	<20	<20	<20	<20	<20	20	38	15	<15	17	8	<1	18	26	12
Sodium	mg/l		0.10	20	15	17	16	13	19	10	11.2	10.1	12.3	12.1	10.5	11.3	14.4	14.4	12.2
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	' ug/l		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/l	7	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ug/l	70	0.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	ug/l	100	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/l	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	ug/l	5	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/l	2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<2	<1.0	<1.0	<1.0	<1.0	<1.0
Field Parameters																			
рН	S.U.	6.5-8.5 (S)						-	-			-		7.13	7.65	7.06	7.59	7.41	7.10
Specific Conductance	umhos/cm						-		-		-	-	700	818	715	524	936	804	586
Temperature	oC					_			_	-	-	_	11.3	12.9	10.6	11.4	10.2	10.6	11.5
Turbidity	NTU					-		-					-	9	13	22	10.5	7.44	16.0

All other VOCs have been historically below laboratory detection limits.

<sup>1 =</sup> U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

	1	<u> </u>			<del></del>			-	,	<u></u>	GN	<b>1-3</b>	-	<del></del>					<del></del>
Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-1)0	Jun-01	Oct-01	Арг-02	Oct-02
Inorganics							,								-				
Ammonia	mg/l		0.05	6	4.9	3.2	0.98	1.4	1	1.4	1.15	0.6	0.8	0.59	0.79	0.52	0.62	0.51	0.76
Chloride	mg/l	250 (S)	1	23	14	25	32	20	40	25	42	24	20	29	44	22	28	24	32
Chemical Oxygen Demand (COD)	mg/l		1	120	80	38	33	<20	<20	25	24	22	<15	28	10	14	18	22	15
Sodium	mg/l		0.10	26	14	14	17	11	16	10	19.2	16.4	16.5	17.7	21.5	15.8	15.0	12.2	20.4
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l	-	11	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,I-Dichloroethene	ug/l	7	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	· <5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ug/l	70	0.5	84	33	26	17	17	36	94	51	85.6	60.7	110	82	61	150	85	100
trans-1,2-Dichloroethene	ug/l	100	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	0.6	0.9	<0.5	<1.0	<5	<1.0	<1.0	1	<1.0	2
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/l	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	ug/l	5	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/i	2	1	10	<1.0	18	42	33	45	32	22.6	22.3	16.6	26	28	24	54	33	_41
Field Parameters																			
рН	S.U.	6.5-8.5 (S)		-		-		-		•	_			7.74	7.88	7.08	7.99	6.89	7.50
Specific Conductance	umhos/cm	-				-			-	•	-		650	615	<b>76</b> 7	382	635	410	445
Temperature	oC							1	-	1	-	-	16.9	13.4	12	8.5	14.6	8.6	16.7
Turbidity	NTU					-		-		1				45	34	13	30.8	29.2	28.0

All other VOCs have been historically below laboratory detection limits.

<sup>&</sup>lt;sup>1</sup> = U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

		·							1		Gl	И-4							<del></del>
Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	' Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics															_				
Ammonia	mg/l	**	0.05	0.37	0.33	0.34	0.28	0.13	0.37	3.1	0.697	0.29	0.24	0.32	0.46	0.36	0.33	0.29	0.25
Chloride	mg/l	250 (S)	1	23	41	12	8.3	11	11	12	16	4.5	19	7	8	5	6	9	4
Chemical Oxygen Demand (COD)	mg/l	-	I	220	65	47	55	20	<20	20	20	20	<15	13	2	6	28	13	8
Sodium	mg/l		0.10	31	41	22	25	18	26	25	40	21	12	17.6	27.8	14.6	15.1	10.2	11.6
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l	-	10	<10	150	<10	<10	<10	<10	<10	<10	<10	<33.3	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l		1	<1.0	<1.0	<1.0	10	12	13	11	16	14	13	19	18	21	25	17	20
1,1-Dichloroethene	ug/l .	7	0.5	<0.5	<0.5	<1.0	<1.0	<0.5	<0.5	3.2	5.2	5	3.7	<5	4.2	7.0	7.1	6.0	5.1
cis-1,2-Dichloroethene	ug/l	70	0.5	130	140	190	260	250	320	250	323	243	250	190	270	570	250	230	180
trans-1,2-Dichloroethene	ug/l	100	1	<1.0	<1.0	<1.0	12	14	16	13	16.3	13	14	13	14	18	20	14	14
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<0.5	<0.5	<3.3	<5.0	<5.0	6	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	180	<1.0	200	140	140	210	180	144	193	143	170	210	610	260	330	380
1,1,2-Trichloroethane	ug/l	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	0.7	<0.5	<0.5	<3.3	<5	<0.5	0.8	0.9	<0.5	0.8
Trichloroethene	ug/l	5	11	410	380	530	280	430	490	500	462	556	435	440	640	1,900	860	870	1,300
Vinyl Chloride	ug/l	2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	2.8	5.2	3.7	4.9	4	8	6	7	5	2
Field Parameters																			
рН	S.U.	6.5-8.5 (S)												7.34	7.02	6.99	7.51	7.23	7.23
Specific Conductance	umhos/cm			-				-				_	690	964	1,141	553	880	660	471
Temperature	οС						-				_		15.2	12.9	11.9	10.8	12.1	9.9	13.1
Turbidity	NTU	-						-		-				13	21	29	22.9	17.4	37.0

All other VOCs have been historically below laboratory detection limits.

<sup>1 =</sup> U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

·			,	'		Du	plicate (GN	1-4)		
Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics		,								
Ammonia	mg/l		0.05	0.25	0.31	0.40	0.34	0.34	0.29	0.26
Chloride	mg/l	250 (S)	1	19	7	7	5	8	8	4
Chemical Oxygen Demand (COD)	mg/l		1	<15	24	4	8	22	16	11
Sodium	mg/l		0.10	12.8	21.5	28.1	14.0	15.8	10.5	7.32
Volatile Organic Compounds										
2-Butanone (Methyl ethyl ketone)	ug/l		10	<33.3	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l		1	15	19	19	21	24	18	27
1,1-Dichloroethene	ug/l	7	0.5	4.5	<5	4.4	6.2	6.9	6.6	5.1
cis-1,2-Dichloroethene	ug/l	70	0.5	246	190	290	540	180	280	260
trans-1,2-Dichloroethene	ug/l	100	1	13	13	14	17	20	- 15	15
1,2-Dichloropropane	ug/l	5	5	<3.3	<5.0	<5.0	6	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	143	170	230	580	180	410	410
1,1,2-Trichloroethane	ug/l	5 -	0.5	<3.3	<5	<0.5	0.8	0.9	<0.5	0.9
Trichloroethene	ug/l	5	1	434	440	650	1,800	610	840	1,400
Vinyl Chloride	ug/l	2	1	4.3	4	9	5	6	5	2
Field Parameters										
рН	S.U.	6.5-8.5 (S)	-		7.34	7.02	6.99	7.51	7.23	7.23
Specific Conductance	umhos/cm			690	964	1,141	553	880	660	471
Temperature	оС		-	15.2	12.9	11.9	10.8	12.1	9.9	13.1
Turbidity	NTU		1	••	13	21	29	22.9	17.4	37.0

All other VOCs have been historically below laboratory detection limits.

<sup>1 =</sup> U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

	<b>T</b>			<u> </u>	,				1		Field	Rlank							
Parameter	Units	MCL1	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics															-		·		
Ammonia	mg/l		0.05	<0.030	<0.030	<0.030	<0.030	<0.030	<0.030	0.22	<0.010	<0.010	0.54	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Chlorid <b>e</b>	mg/l	250 (S)	1	<1.0	<1.0	<1.0	<1.0	1.8	<1.0	<1.0	<1.0	<1.0	19	<1	<1.0	<1.0	1	<1	1
Chemical Oxygen Demand (COD)	mg/l		1	<20	<20	<20	<20	<20	<20	115	33	<15	<15	4	<1.0	<1.0	3_	<5	<5
Sodium	mg/l		0.10	<0.50	<0.50	<0.50	<0.50	14	<0.50	76	<0.20	<0.20	94.2	<0.10	0.28	0.33	0.20	0.403	0.18
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l	-	10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l		1	<1.0	<1.0	<1.0	<1.0	<1'.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/l	7	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ug/l	70	0.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	ug/l	100	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5.0	<5.0	<5.0	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/l	5	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	ug/l	5	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	1	<1.0	<1.0
Vinyl Chloride	ug/l	2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Field Parameters																			
pH	S.U.	6.5-8.5 (S)				<del>-</del>		-			-	-							
Specific Conductance	umhos/cm				-	-										-			
Temperature	oC	1			-		1				••	-							
Turbidity	NTU															-			-

All other VOCs have been historically below laboratory detection limits.

<sup>&</sup>lt;sup>1</sup> = U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

					,				1		Trip	Blank		<del></del>		<del></del>	<del></del>	<del></del>	
Parameter	Units	MCL <sup>1</sup>	MDL <sup>2</sup>	Jun-95	Jan-96	Jun-96	' Jan-97	Jun-97	Dec-97	Jun-98	Jan-99	Jun-99	Dec-99	Jun-00	Dec-00	Jun-01	Oct-01	Apr-02	Oct-02
Inorganics															-				
Ammonia	mg/l		0.05	<0.030	<0.030	<0.030	<0.030			<0.010	<0.010					-			
Chloride	mg/l	250 (S)	1	<1.0	<1.0	<1.0	<1.0			<1.0	<1.0								
Chemical Oxygen Demand (COD)	mg/l		1	<20	<20	<20	<20	~		<5	<5			+					
Sodium	mg/l		0.10	<0.50	<0.50	<0.50	<0.50	-		<0.20	<0.20	-						-	
Volatile Organic Compounds																			
2-Butanone (Methyl ethyl ketone)	ug/l		10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	<50	<10	<10	<10	<10	<10
1,1-Dichloroethane	ug/l		1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1-Dichloroethene	ug/l	7	0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
cis-1,2-Dichloroethene	ug/l	70	0.5	<5.0	<5.0	<5.0	<5.0	<5.0	<5.0	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
trans-1,2-Dichloroethene	ug/l	100	_ 1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,2-Dichloropropane	ug/l	5	5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5.0	<5.0	<5.0_	<1.0	<1.0	<1.0
1,1,1-Trichloroethane	ug/l	200	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
1,1,2-Trichloroethane	ug/l	5	0.5	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<0.5	<0.5	<0.5	<0.5	<0.5
Trichloroethene	ug/l	5	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Vinyl Chloride	ug/l	2	1	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<0.5	<0.5	<0.5	<1.0	<5	<1.0	<1.0	<1.0	<1.0	<1.0
Field Parameters																			
pH	S.U.	6.5-8.5 (S)																	
Specific Conductance	umhos/cm	**		-	-	-	-	-		-									
Temperature	οС		-		-				-			_							
Turbidity	NTU											-							_

All other VOCs have been historically below laboratory detection limits.

<sup>&</sup>lt;sup>1</sup> = U.S. EPA Maximum Contaminant Level

<sup>&</sup>lt;sup>2</sup> = Current Laboratory Method Detection Limit

<sup>(</sup>S) = Secondary U.S. EPA MCL

Table 2
City of Columbia City, Indiana
Wayne Reclamation & recycling Facility
Groundwater Elevations & Well Data

	TOC Elevation			Depth	to Water (feet )	ВТОС)		
Well No.	(feet amsl)	12/13/99	6/29/00	12/5/00	6/4/01	10/25/01	4/22/02	10/15/02
GM-1	841.03	31.26	30.19	31.61	30.31	29.54	29.24	31.64
GM-2	833.24	23.65	22.08	23.60	22.18	21.45	21.12	23.75
GM-3	822.86	11.74	10.69	12.45	11.73	8.46	10.51	12.40
GM-4	827.37	16.54	15.33	17.18	16.39	13.51	15.17	17.21
MW-4S	842.94			33.43	32.03	31.52	30.92	33.55

	TOC Elevation			Groundw	ater Elevation (	feet amsl)		
Well No.	(feet amsl)	12/13/99	6/29/00	12/5/00	6/4/01	10/25/01	4/22/02	10/15/02
GM-1	841.03	809.77	810.84	809.42	810.72	811.49	811.79	809.39
GM-2	833.24	809.59	811.16	809.64	811.06	811.79	812.12	809.49
GM-3	822.86	811.12	812.17	810.41	811.13	814.40	812.35	810.46
GM-4	827.37	810.83	812.04	810.19	810.98	813.86	812.20	810.16
MW-4S	842.94			809.51	810.91	811.42	812.02	809.39

	TOC Elevation			И	ell Stick-Up (fe	et)		
Well No.	(feet amsl)	12/13/1999	6/29/2000	12/5/2000	6/4/2001	10/25/2001	4/22/2002	10/15/2002
GM-1	841.03	2.1		1.9	1.9	2.1	1.8	2.1
GM-2	833.24	2.5		2.2	2.2	2.5	2.2	2.5
GM-3	822.86	2.2		2.0	2.0	2.3	1.9	2.3
GM-4	827.37	3.3		2.6	2.6	3.0	2.5	3.0
MW-4S	842.94		-			3.0	2.6	

	TOC Elevation		Depth-to-Bottom (feet BTOC)								
Well No.	(feet amsi)	12/13/1999	6/29/2000	12/5/2000	6/4/2001	10/25/2001	4/22/2002	10/15/2002			
GM-1	841.03	35.10	34.84	34.84	34.84	34.86	34.81	34.81			
GM-2	833.24	39.08	38.87	38.86	38.86	38.88	38.83	38.83			
GM-3	822.86	27.95	27.72	27.75	27.75	27.74	27.71	27.71			
GM-4	827.37	28.17	27.93	27.95	27.95	27.95	27.91	27.91			
MW-4S	842.94			39.74	39.74	40.93	40.88	_			

Data prior to 12/99 unavailable.

TOC = Top of casing elevation reported by Geraghty & Miller SAP.

amsl = above mean sea level.

BTOC = below top of casing

Burgess & Niple, Limited 11/14/2002

**ATTACHMENT 1** 

FIELD-SAMPLING SHEETS AND CHAIN-OF-CUSTODY FORM

### GROUNDWATER MONITORING WELL RECORD FORM SITE LOCATION: WAYNE RECLAMATION & RECYCLING FACILITY CITY OF COLUMBIA CITY, IN

WELL NO.: GM-1	DATE: _	10-14-	02	PROJECT	`NO.: _	315	60	
FIELD BOOK NO.: NA	_WEATHE	R:	Su	nny to F	Partly !	cloudy	C001	50'5
SAMPLING CREW:				_				
WELLHEAD INSPECTION: Evidence of Activities at Well: Well Protector Condition: Insect/Rodent Intrusion: Other:	Good / No /	Poor	Commen	ıt:				
Water Level Indicator: Solinst  Soiltest Plopper								
STATIC WATER LEVEL:  Reference Point (RP) Elevation: Top Casing Top Protector Well Stick-up  Measured Level: 1st								ge 
			TIM	E (IN MINU	JTES)			
MEASUREMENTS	1132AM	1133AM	1134AM	1135AM	MATCH			
Amount of Water Removed (mls.)				3.0	<del>}</del>			
pH (S.U.)	5.98	7.07	7.08	7.08	7-11			
Conductivity (umhos/cm)	607	504	A83	481	487			
Temperature (°C)	12.5	12.0	11.8		167			
Turbidity (NTU)	157	155	254	327	4			
TDS (ppm)	299	252	241	240	243			<del></del> i
Dissolved Oxygen (mg/l)	<u> </u>							
SAMPLING:  Sampling Device: Dedicated Pump Dedicated Pump Disposable Bailer Grundfos Pump Bladder Pump Other  Time Sampling Began: 114044 Time Completed: 1150 M  Characteristics of Water: Odor Color Brown								
	Turbidity	Cilty		Other	VIA		Nore	/
QA/QC Sample Collected: Duplicat	е кері	icate M	atrix Spike	/Matrix Spi	ке Дирію	cate	None _	<u>_</u>
REMARKS:	Bails	notice	d 100	n in	woter	<u> </u>		

### GROUNDWATER MONITORING WELL RECORD FORM SITE LOCATION: WAYNE RECLAMATION & RECYCLING FACILITY CITY OF COLUMBIA CITY, IN

WELL NO.:GM-3	DATE: _	10-1	4-02	PROJECT	NO.:	31560	
FIELD BOOK NO.: NA	_WEATH	ER:	<u></u> S	unny to	partly c	loudy co	01 50'
SAMPLING CREW:							
WELLHEAD INSPECTION: Evidence of Activities at Well: Well Protector Condition: Insect/Rodent Intrusion: Other:	Good 🖊	Poor	Commer Commer	nt:			·
FIELD EQUIPMENT USED:		······································	·	· · · · · · · · · · · · · · · · · · ·	Date Cal	ibrotod.	
Water Level Indicator: Solinst	Cailtant	Dlonn					
-II Motor: House Orion	_ Somesi	Plopp	EI			0-14-02	
pH Meter: Hanna Orion				•			
Conductivity Meter: YSI				1	<del></del>		
Thermometer: YSI Turbidity: Hach HF Scienti	manna	_ Oakton Z				<del></del>	
Dissolved Oxygen: Corning No		'omina Na	<b>3</b> ·			+-	<del></del>
					<del></del>	<del>}</del>	<del></del>
Other:			41.4	<del></del>	<del></del>	<u> </u>	<del></del>
STATIC WATER LEVEL:		,		•			
Reference Point (RP) Elevation:	Top Casin	ng	_Top Prote	ctor		Well Sticl	k-up
Measured Level: 1st Time/Depth: 110 M 12		2nd		3rd		Av	erage
Time/Depth:	1.40	1110mm 12.4	0	1110AM / 12.	<u>4</u> 0	12.4	40
Well Bottom: Measured Distant	ce from RF	27	-71	5 WV	12.5	5	
DUDCING.							
PURGING: Decises Decises Decises del	D	Dadiastad	l Duma	Dianasa	ble Deilee		
Purging Device: Dedicated I Grundfos P	b	Diodder D		Dispose	ible Dallel		
Time Elapsed During Purging (min							a . 11aak
Time Liapsed During Linging (min	is.)	10(a)	Oanous IX	illoved Dui	ing ruigii	ig	German
			TIM	E (IN MINI	JTES)		
MEASUREMENTS	106PM	IDSPM	MABOI	IIDPA	ILDPM	113PM	IILPM
Amount of Water Removed (mls.)	I	1:0	3.0	5.0	7.0	9.0	12.5
pH (S.U.)	7.64	7.49	7.48	7,48	7.49	7.49	7.50
Conductivity (umhos/cm)	303				445	446	445
Temperature (°C)	18.1	17.4	16.8	16.7	16.7	16.6	16.7
Turbidity (NTU)	25	31	24	26	26	28	28
TDS (ppm)	151	193	318	223	223	223	223
Dissolved Oxygen (mg/l)	<u> </u>		-			_	_
SAMPLING:							
Sampling Device: Dedicated F	nmn	Dedicated	Pumn	Disposa	ble Bailer		
Grundfos P							
Time Sampling Began: 12004	r	Time Com	nleted:	30PM	· · · · · ·		
Characteristics of Water:	Odor	۸ ادا	p.c.ca	Color	Cleur		
		Cleu	r	Other	<del></del>	<del></del>	
QA/QC Sample Collected: Duplica						ate None	1
REMARKS:							
* Equipment Blank	D	5-15- 4	m En.w	plime (i)	ell at	105 PA	۸ ،
- Equipment Diank	DOVE	prior 1	<u></u>	<u>-, ) ~</u>		103 17	1

7 plicate Taken

### GROUNDWATER MONITORING WELL RECORD FORM SITE LOCATION: WAYNE RECLAMATION & RECYCLING FACILITY -

CITY OF COLUMBIA CITY, IN

	DATE: _	10-14-	02	PROJECT	NO.:	31560	
FIELD BOOK NO.: HA	_WEATHE	R:	Sun	ny to Par	Hly cloud	ly cool	50'3
					_	-	
WELLHEAD INSPECTION:							
Evidence of Activities at Well:	No /	Yes	Commen	nt:			
Well Protector Condition:	Good ./	Poor	Commen	 t:			<del></del>
Insect/Rodent Intrusion:	No /	Yes	Commen	 ıt:			
Other:		МIA					
FIELD EQUIPMENT USED:					Date Calib	rated:	
Water Level Indicator: Solinst	Soiltest	Ploppe	er		10	-14-02	
pH Meter: Hanna Orion						/	
Conductivity Meter: YSI	Dakton 🗸	Myron L					
Thermometer: YSI	Hanna	Oakton 🗸					
Turbidity: Hach HF Scienti	fic		<del></del>				
Dissolved Oxygen: Coming No	o. 1 Co	orning No. 2	2				
Other:		•				1	
STATIC WATER LEVEL:							
Reference Point (RP) Elevation:	Top Casing	, /	Ton Protec	tor		Well Stick	-un
Measured Level: 1st	Top Cusing	2nd	_10p11000	3rd		v.en Stiek Ave	
Time/Depth: 1104Am/ 17.21	11						
Well Bottom: Measured Distance							
					_ 0		
PURGING:		<b></b>	<b>5</b>	n: ,	'n		
Purging Device: Dedicated I	ump	Dedicated	Pump	Disposa	pie Bailer -		
יו אוזחוותו אינייייייייייייייייייייייייייייייייייי		DI 11. D		0.1		1	
				Other		'	Gallons
Time Elapsed During Purging (min			Gallons Re	moved Dur	ing Purging	'	Gallons
Time Elapsed During Purging (min	s.):11	Total	Gallons Re	moved Dur	ing Purging	<u>.                                     </u>	Gallons
Time Elapsed During Purging (min	s.): <u>  [</u>	Total	Gallons Re TIMI	moved Dur E (IN MINU 1240PM	ing Purging ITES)	9.0	Gallons
Time Elapsed During Purging (min  MEASUREMENTS  Amount of Water Removed (mls.)	S.):	Total	Gallons Re TIMI 1238PM 3:0	E (IN MINU 1240PM 5.0	TES)	9.0	Gallons
Time Elapsed During Purging (min  MEASUREMENTS  Amount of Water Removed (mls.)  pH (S.U.)	S.): 11 1234 PM 1 7-27	Total	Gallons Re TIME 1238PM 3.0 7.18	(IN MINU 1240PM 5.0	TES) 1242PM 7.0	1245PM 9.0 7.23	Gallons
MEASUREMENTS Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm)	S.): 11 1234 PM I 7-27 417	1236P4 1:0 7:16 438	TIME 1238PM 3:0 7:18 462	(IN MINU 1240PM 5.0 7.19 469	TES) 1242PM 7.0 7.15	9.0 1245PM 9.0 7.23 471	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C)	1234 PM 127-27 417 15-0	Total 1236PM 1:0 7:16 438 14.1	TIME 1238PM 3:0 7:18 462 13:5	(IN MINU 1240PM 5.0 7.19 469	TTES) 1242PM 7.0 7.15 468 13.3	1245PM 9.0 7.23 471 13.1	Gallons
MEASUREMENTS  Amount of Water Removed (mls.)  pH (S.U.)  Conductivity (umhos/cm)  Temperature (°C)  Turbidity (NTU)	1234 PM 1 7-27 417 15.0 73	Total 1236P4 1:0 7:16 438 14:1	TIME 1238PM 3:0 7:18 462	(IN MINU 1240PM 5.0 7.19 469	TTES) 1242PM 7.0 7.15 468 13.3	9.0 1245PM 9.0 7.23 471 13.1	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm)	1234 PM 127-27 417 15-0	Total 1236PM 1:0 7:16 438 14.1	TIME 1238PM 3:0 7:18 462 13:5	(IN MINU 1240PM 5.0 7.19 469	TTES) 1242PM 7.0 7.15 468 13.3 36 234	1245PM 9.0 7.23 471 13.1	Gallons
MEASUREMENTS  Amount of Water Removed (mls.)  pH (S.U.)  Conductivity (umhos/cm)  Temperature (°C)  Turbidity (NTU)	1234 PM 1 7-27 417 15.0 73	Total 1236P4 1:0 7:16 438 14:1	TIME 1238PM 3:0 7:18 462 13.5	(IN MINU 1240PM 5.0 7.19 469 13.3 57	TTES) 1242PM 7.0 7.15 468 13.3	9.0 1245PM 9.0 7.23 471 13.1	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)	1234 PM 1 7-27 417 15.0 73	Total 1236P4 1:0 7:16 438 14:1	TIME 1238PM 3:0 7:18 462 13:5 122 231	(IN MINU 1240PM 5.0 7.19 469 13.3 57	TTES) 1242PM 7.0 7.15 468 13.3 36 234	9.0 1245PM 9.0 7.23 471 13.1	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)	1234 PM 1 7-27 417 15.0 73 208	Total 1236P4 1:0 7:16 438 14.1 134 2:19	TIME 1238PM 3:0 7:18 462 13:5 122 231	E (IN MINU 1240PM 5.0 7.19 469 13.3 57 234 —	TTES) 1242PM 7.0 7.15 468 13.3 36 234	1245PM 9.0 7.23 921 13.1 37 226	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F	1234 PM 1 7-27 417 15.0 73 208	Total 1236P4 1:0 7:16 438 14.1 134 2:19 —	TIME 1238PM 3.0 7.18 462 13.5 122 231	E (IN MINU 1240PM 5.0 7.19 469 13.3 57 234 — Disposa	TTES) 1242PM 7.0 7.15 468 13.3 36 234	1245PM 9.0 7.23 971 13.1 37 226	Gallons
MEASUREMENTS Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F	1234 PM 17-27 417 15.0 73 208	Total  1236PA  110  7-16  438  14.1  134  219  Dedicated Bladder P. Time Com	TIME 1238PM 3:0 7:18 462 13.5 122 231 - Pump ump pleted:	E (IN MINU 1240PM 5.0 7.19 469 13.3 57 234 — Disposal Other	TTES) 1242PM 7.0 7.15 468 13.3 36 234	1245PM 9.0 7.23 971 13.1 37 226	Gallons
MEASUREMENTS Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F	1234 PM 17-27 417 15.0 73 208	Total  1236PA  110  7-16  438  14.1  134  219  Dedicated Bladder P. Time Com	TIME 1238PM 3:0 7:18 462 13.5 122 231 - Pump ump pleted:	E (IN MINU 1240PM 5.0 7.19 469 13.3 57 234 — Disposa Other 100PM	TTES) 1242PM 7.0 7.15 468 13.3 36 234	1245PM 9.0 7.23 971 13.1 37 226	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F Grundfos P Time Sampling Began:	1234 PM  1 7-27 417 15.0 73 208	Total  1236P4  1:0  7:16  438  14.1  134  2:19  —  Dedicated Bladder P. Time Compola	TIME 1238PM 3.0 7.18 462 13.5 122 231 Pump ump pleted:	Color   Colo	TTES) 1242PM 7.0 7.15 468 13.3 36 234 -	1245PM 9.0 7.23 971 13.1 37 226	Gallons
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F Grundfos P Time Sampling Began:	1234 PM  1 7-27 417 15.0 73 208	Total  1236PA  110  7-16  438  14.1  134  219  —  Dedicated Bladder Polime Compola  Cleor	TIME 1238PM 3.0 7.18 462 13.5 122 231 - Pump ump pleted:	Disposa Other Other Other	ing Purging  ITES)  1242PM  7.0  7.15  468  13.3  36  234	1245PM 9.0 7.23 971 13.1 37 226	
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F Grundfos P Time Sampling Began: 1250 pM Characteristics of Water:  QA/QC Sample Collected: Duplica  REMARKS:	1234 PM  1 7-27 417 15.0 73 208	Total  1236PA  110  7-16  438  14.1  134  219  —  Dedicated Bladder Polime Compola  Cleor	Gallons Re TIME 1238PM 3.0 7.18 462 13.5 122 231 - Pump ump pleted:	Disposal Other Color Other Matrix Spil	ing Purging  TES)  1242PM  7.0  7.15  468  13.3  36  234  -  ble Bailer  Cleur  Pla  ke Duplicat	9.0  1245PM  9.0  7.23  9.1  13.1  27  226  -  None	
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F Grundfos Pr Time Sampling Began: 1250 pM Characteristics of Water:  QA/QC Sample Collected: Duplica	1234 PM 1 7-27 417 15-0 73 208	Total  1236PA  110  7-16  438  14.1  134  219  —  Dedicated Bladder Polime Compola  Cleor	Gallons Re TIME 1238PM 3.0 7.18 462 13.5 122 231 - Pump ump pleted:	Disposal Other Color Other Matrix Spil	ing Purging  TES)  1242PM  7.0  7.15  468  13.3  36  234  -  ble Bailer  Cleur  Pla  ke Duplicat	9.0  1245PM  9.0  7.23  9.1  13.1  27  226  -  None	
MEASUREMENTS  Amount of Water Removed (mls.) pH (S.U.) Conductivity (umhos/cm) Temperature (°C) Turbidity (NTU) TDS (ppm) Dissolved Oxygen (mg/l)  SAMPLING: Sampling Device: Dedicated F Grundfos P Time Sampling Began: 1250 pM Characteristics of Water:  QA/QC Sample Collected: Duplica REMARKS:	1234 PM 1 7-27 417 15-0 73 208	Total  1236PA  110  7-16  438  14-1  134  219  —  Dedicated Bladder Protine Compola  Clear icate M	Gallons Re TIME 1238PM 3.0 7.18 462 13.5 122 231 - Pump ump pleted:	Disposa Other Other Other	ing Purging  TES)  1242PM  7.0  7.15  468  13.3  36  234  -  ble Bailer  Cleur  Pla  ke Duplicat	9.0  1245PM  9.0  7.23  9.1  13.1  27  226  -  None	

### GROUNDWATER MONITORING WELL RECORD FORM SITE LOCATION: WAYNE RECLAMATION & RECYCLING FACILITY CITY OF COLUMBIA CITY, IN

_WEATHE		50n				
	Botley			Portly CI		
		1 Van Z	Londt	· .	<del></del>	
No 🗸	Yes	Commen	it:			
Good 🗸	Poor	Commen	t:			
No V	Yes	Commen	nt:			<del></del>
	и	A				
				Date Calib	rated:	
Soiltest	Ploppe	er		10-	14-02	
			i	7		
lanna	Oakton./					
					\	
	oming No.	2			1	
	_					
<del></del>	·				<b>—</b>	
	,		,			
Top Casing	g/					
	2nd	_	3rd		Αv	erage
15	1100m/ 23	.75 <sub>1</sub>	100 MM / 2	<u>3.</u> 75	23	3.75
e from RP	: <u>38.8</u>	<u>3 ·                                    </u>	54	N= 12.3		
	- ·· ·		<b>-</b> .		./	
ump	Dedicated	Pump	Dispos	able Bailer_	<u> </u>	
ımp	Bladder P	ump	_ Other_	<del></del>	<del></del>	
;.): <u>13</u>	Total	Gallons Re	moved Du	iring Purging	: <u> </u>	-11675
		TIME	E (IN MIN	UTES)		
1200 PM	1202PM	1204PM	120574	1210 PM	1211PM	1213PM
1	110	3.0	50	7.0	9,0	12.5
7.04	7.07	7.09	7.12	7-19	7.19	7.10
	563	580	584		582	586
55b	· · · · · · · · ·		1			
55b	1 12 3	n.0	111.9	1 11.9	11.8	
13.2	12.3	120	11.9	11.9	11.8	11.5
13.2 179	277	113	SI	32	21	11.5
13.2 179 278	277 2 <b>82</b>	113	51 292	32 292	21 291	11.5
13.2 179	277	113	SI	32	21	11.5
13.2 179 278	277 2 <b>82</b>	113	51 292	32 292	21 291	11.5
13.2 179 278	277 282 -	113 290 -	51 292 -	32 292 -	21 291 -	11.5
13.2 179 278 —	277 282 —	113 290 -	51 292 — Dispos	32 292 able Bailer	21 291 -	11.5
13.2 179 278 ———————————————————————————————————	277 282 - Dedicated Bladder P	290	51 292 — Dispos Other	32 292 -	21 291 -	11.5
13.2 179 278 — ump 	277 282  Dedicated Bladder P Time Com	Pump	Dispos Other	32 292 – able Bailer	21 291 -	11.5
13.2 179 278 — ump 	277 282  Dedicated Bladder P Time Com	Pump	Dispos Other	32 292 able Bailer	21 291 -	11.5
13.2 179 278 — ump mp Odor Turbidity	282  Dedicated Bladder P Time Com  Pla  Clear	Pump ump pleted:	Dispos Other Color Other	able Bailer	21 291 -	292
13.2 179 278 — ump mp Odor Turbidity	282  Dedicated Bladder P Time Com  Pla  Clear	Pump ump pleted:	Dispos Other Color Other	32 292 able Bailer	21 291 -	292
13.2 179 278 — ump mp Odor Turbidity	282  Dedicated Bladder P Time Com  Pla  Clear	Pump ump pleted:	Dispos Other Color Other	able Bailer	21 291 -	292
	Soiltest Oakton Oakton Idanna Sic I Top Casin Se from RP Si.): 13	Soiltest Ploppe Oakton Myron L Hanna Oakton Moron L Hanna Oakton Myron L Corning No.  Top Casing March 1'3  From RP: 38.8  Sump Dedicated Imp Bladder Part Sale Total	Soiltest Plopper Oakton Myron L Hanna Oakton Myron L Corning No. 2  Top Casing Top Protect 2nd  Top Casing Top Pro	Soiltest Plopper Oakton Myron L  Hanna Oakton Myron L  Gic Top Casing Top Protector  2nd 3rd  15 1100M/ 2'3.75 1100M/ 2  e from RP: 38.83 54  Tump Dedicated Pump Disposemp Bladder Pump Other  S.): 13 Total Gallons Removed Du  TIME (IN MIN	Date Calib Soiltest Plopper 10- Oakton / Myron L Hanna Oakton / Manna Oakton / Ma	Date Calibrated:  Soiltest Plopper 10-14-02  Oakton Myron L  Hanna Oakton Myron L  Corning No. 2  MA  Top Casing Top Protector Well Stick  2nd 3rd Av  Solution 23.75  e from RP: 38.83  Date Calibrated:  10-14-02  Well Stick  2nd 3rd Av  Estimate 10-14-02  Top Protector Well Stick  2nd 3rd Av  Solution 23.75  End From RP: 38.83  Solution 12.37  Time (IN MINUTES)  Time (IN MINUTES)  1200 PM 120 PM 120 PM 1210 PM 1211 PM

### BURGESS & NIPLE ENVIRONMENTAL LABORATORY CHAIN-OF-CUSTODY RECORD

PROJECT N	NO:		CLIENT N			<del></del>					*	3	HCL						
3156	0		Wayne	7.	clar	nation	- Colon	mbia Lity Indiana		9/2	H2504	HN03							oC_
SAMPLER:								Burgess	   T	Plastic			21810						
Stephe	m L.	В	atly h					ud.	0	210	Plastic	plastic	61055	İ					
Sample NO.	DAT	- 1	TIME	С О М Р	G R A B		SAMPLE	DESCRIPTION	T A L #	250 mL	7W 052	J TWOSZ	40 m 61			Temp	REMARK PH	S Cand	Tur
GM: 1	10/15/0	12	1140AM		/		Grave	dwater	5	i	1	ı	2.			11.7	7-11	487	66
GM-Z	7		1215PM		1			(	5	,	1	,	2			11.5	7•10	586	16
GM·3			120Pm		1				5	1	1	,	2			16.7	7.50	445	28
GM-4			1250PM		1			\	5	1	,	,	2		 	13.1	7.23	471	37
GM- Duplicate					1			1	5	1	1	1	2						
Equipment	∖ જ		105PM				DI	Dater	5	1	ı	1	2						
Trip	14/19/0	2						(	2				2						
				-									-						<u>-</u>
								I:											
Relinquished	1 by: 				<del>-</del>	Date	Time	Received by:				10	ale	Ti	יזוני	Remarks:			
Relinquished Alephen	I by.	oth	cy Z		<u> </u>	10/03/10	71mc 845047	Received for Lab by:	6			L .	ale - (		me > 1/5		·- · · · · · · · · · · · · · · · · · ·		
BURGESS & ENVIRONM	NIPLE,	LIMIT	in .				TELEPHO	D ROAD, COLUMBUS, OH NE. (614)459-2050 0459-5398	43220			ME	IHOD	OF SE		NT. und Deli	vered to	u Leb	

ATTACHMENT 2

LABORATORY REPORT

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 08-Nov-02

Original Report Date: 30-Oct-02

#### ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

City of Columbia City

Groundwater Monitoring 1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10824

Sample ID: GM-1

Date Submitted to Lab: 10/16/02

10/10/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time 11:40 AM

By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	1.24	mg/l	10/18/02	лw	24328
CL	4500-C1 B	Chloride	31	mg/l	10/22/02	JDC	24397
COD	410.4	Chemical Oxygen Demand	37	mg/l	10/16/02	JDC	24276
NAICP	6010/200.7	Sodium	21.5	mg/l	10/25/02	AAK	24517
8260-COLUME	3I 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10824: Page 1

#### - CERTIFICATE OF ANALYSIS -

**ANALYTICAL SCIENCES** 

**COLUMBUS OPERATIONS** 

Lab Number 02-10824 -Continued from Previous Page

Test Group	EPA Method	' Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	trans-1,2-Dichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5-	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,1,2-Trichloroethane	< 0.5	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	< 1	ug/l	10/21/02	DCS	24538
	8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10824: Page 2

- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

Lab Number 02-10824 -Continued from Previous Page

					Analysis		
Test Group	EPA Method	Test	Result	Units	Date	Analyst	WS#
TEMP	<del></del>	Temperature	11.7	degrees C	10/15/02	SCB	24298
PHFIELD		pН	7.11	S.U.	10/15/02	SCB	24300
CONDFIELD		Conductivity	487	umhos/cm	10/15/02	SCB	24301
TURBFIELD		Turbidity	664	NTU	10/15/02	SCB	24302

End of Report

Report Approved By:

#### - CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

City of Columbia City

Date Reprinted: 08-Nov-02

Groundwater Monitoring

Original Report Date: 30-Oct-02

1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10825

Sample ID: GM-2

Date Submitted to Lab: 10/16/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time 12:15 PM

By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	1.43	mg/l	10/18/02	лw	24328
CL	4500-Cl B	Chloride	14	mg/l	10/22/02	πс	24397
COD	410.4	Chemical Oxygen Demand	12	mg/l	10/16/02	љс	24276
NAICP	6010/200.7	Sodium	12.2	mg/l	10/25/02	AAK	24517
8260-COLUMI	3I 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10825: Page 1

#### - CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

Lab Number 02-10825 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMBI	8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/I	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	trans-1,2-Dichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,1,2-Trichloroethane	< 0.5	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	< 1	ug/l	10/21/02	DCS	24538
	8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10825: Page 2

- CERTIFICATE OF ANALYSIS -

**ANALYTICAL SCIENCES** 

**COLUMBUS OPERATIONS** 

Lab Number 02-10825 - Continued from Previous Page

		Analysis	
Test Group	EPA Method Test	Result Units Date Analyst W	S#
TEMP	Temperature	11.5 degrees C 10/15/02 SCB 242	298
PHFIELD	pН	7.10 S.U. 10/15/02 SCB 243	00
CONDFIELD	Conductivity	586 umhos/cm 10/15/02 SCB 243	01
TURBFIELD	Turbidity	16.0 NTU 10/15/02 SCB 243	02

Report Approved By:

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10825: Page 3

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 08-Nov-02

Original Report Date: 30-Oct-02

#### ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

City of Columbia City

Groundwater Monitoring

1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10826

Sample ID: GM-3

Date Submitted to Lab: 10/16/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time 1:20 PM

By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	0.76	mg/l	10/18/02	JRW	24328
CL	4500-Cl B	Chloride	32	mg/l	10/22/02	ЛС	24397
COD	410.4	Chemical Oxygen Demand	15	mg/l	10/16/02	ЛС	24276
NAICP	6010/200.7	Sodium	20.4	mg/l	10/25/02	AAK	24517
8260-COLUM	BI 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/i	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02		24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02		24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02		24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02		24538
	0200	Dioromonomentale	\ J	~ E/ 1	10/21/02		27330

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10826: Page 1

**ANALYTICAL SCIENCES** 

**COLUMBUS OPERATIONS** 

Lab Number 02-10826 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	8260	1,2-Dibromoethane (EDB)	· <5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260 .	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	100	ug/l	10/22/02	DCS	24561
		Result from diluted analysis was	used.				
	8260	trans-1,2-Dichloroethene	2	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
•	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,1,2-Trichloroethane	< 0.5	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	41	ug/l	10/22/02	DCS	24561

Result from diluted analysis was used.

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10826: Page 2

5085 Reed Road, Suite A \* Columbus, Ohio 43220 Phone (614) 459-1701 \* Fax (614) 459-5398 e-mail: aal@aal-inc.com \* www.aal-inc.com

- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

Lab Number 02-10826 -Continued from Previous Page

Test Group EPA Metl	nod Test		nalysis Date Analyst	ws#
8260-COLUMBI 8260	Xylene, Total	< 5 ug/l 10	0/21/02 DCS	24538
TEMP	Temperature	16.7 degrees C 10	0/15/02 SCB	24298
PHFIELD	pН	7.50 S.U. 10	0/15/02 SCB	24300
CONDFIELD	Conductivity	445 umhos/cm 10	0/15/02 SCB	24301
TURBFIELD	Turbidity	28.0 NTU 10	0/15/02 SCB	24302

End of Report

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 21-Nov-02

Original Report Date: 30-Oct-02

ANALYTICAL SCIENCES

**COLUMBUS OPERATIONS** 

City of Columbia City

Groundwater Monitoring

1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10827

Sample ID: GM-4

Date Submitted to Lab: 10/16/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time 12:50 PM

By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	0.25	mg/l	10/18/02	JRW	24328
CL	4500-C1B	Chloride	4	mg/l	10/22/02	JDC	24397
COD	410.4	Chemical Oxygen Demand	8	mg/l	10/16/02	JDC	24276
NAICP	6010/200.7	Sodium	11.6	mg/l	10/25/02	AAK	24517
8260-COLUMB	I 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/I	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10827: Page 1

ANALYTICAL SCIENCES • COLU

COLUMBUS OPERATIONS

Lab Number 02-10827 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMBI	8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	20	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	5.1	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	180	ug/l	10/22/02	DCS	24561
		Result from diluted analysis v	vas used.				
	8260	trans-1,2-Dichloroethene	14	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/I	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DC8	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	380	ug/l	10/22/02	DCS	24561
		Result from diluted analysis w	vas used.				
	8260	1,1,2-Trichloroethane	0.8	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	1300	ug/l	10/22/02	DCS	24561
		Result from diluted analysis w					
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10827: Page 2

5085 Reed Road, Suite A • Columbus, Ohio 43220 Phone (614) 459-1701 • Fax (614) 459-5398 e-mail: aal@aal-inc.com • www.aal-inc.com

- CERTIFICATE OF ANALYSIS -

**ANALYTICAL SCIENCES** 

**COLUMBUS OPERATIONS** 

Lab Number 02-10827 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMBI	8260	Vinyl chloride	2	ug/l	10/21/02	DCS	24538
	8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538
		Surrogate out due to sample matri	x interferer	ice.			
TEMP		Temperature	13.1	degrees C	10/15/02	SCB	24298
PHFIELD		pH	7.23	S.U.	10/15/02	SCB	24300
CONDFIELD		Conductivity	471	umhos/cm	10/15/02	SCB	24301
TURBFIELD		Turbidity	37.0	NTU	10/15/02	SCB	24302

Report Approved By:

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10827: Page 3

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 21-Nov-02

Original Report Date: 30-Oct-02

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

City of Columbia City
Groundwater Monitoring
1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10828 Sample ID: GM-Duplicate

Date Submitted to Lab: 10/16/02 Date Logged-In: 10/16/02

Client Project #: 27453 Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02 Time By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	0.26	mg/l	10/18/02	лw	24328
CL	4500-C1 B	Chloride	4 '	mg/l	10/22/02	JDC	24397
COD	410.4	Chemical Oxygen Demand	11	mg/l	10/16/02	JDC	24276
NAICP	6010/200.7	Sodium	7.32	mg/l	10/25/02	AAK	24517
8260-COLUME	3I 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10828: Page I

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#### - CERTIFICATE OF ANALYSIS -

#### AMERICAN ANALYTICAL LABORATORIES, INC.

ANALYTICAL SCIENCES •

**COLUMBUS OPERATIONS** 

Lab Number 02-10828 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	I 8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	27	ug/l	10/22/02	DCS	24561
		Result from diluted analysis wa	as used.				
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	5.1	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	260	ug/l	10/22/02	DCS	24561
		Result from diluted analysis wa	as used.				
	8260	trans-1,2-Dichloroethene	15	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	410	ug/l	10/22/02	DCS	24561
		Result from diluted analysis wa	is used.				
	8260	1,1,2-Trichloroethane	0.9	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	1400	ug/l	10/22/02	DCS	24561
		Result from diluted analysis wa					
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10828: Page 2

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- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES . COLUMBUS OPERATIONS

Lab Number 02-10828 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	I 8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	2	ug/l	10/21/02	DCS	24538
	8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538

Surrogate out due to sample matrix interference.

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 08-Nov-02

Original Report Date: 30-Oct-02

ANALYTICAL SCIENCES

**COLUMBUS OPERATIONS** 

City of Columbia City

Groundwater Monitoring

1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10829

Sample ID: Equipment Blank

Date Submitted to Lab: 10/16/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: G/Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time 1:05 PM

By: Botley

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
NH3A	350.1	Ammonia	< 0.05	mg/l	10/18/02	лw	24328
CL	4500-Cl B	Chloride	1	mg/l	10/22/02	JDС	24397
COD	410.4	Chemical Oxygen Demand	< 5	mg/l	10/16/02	JDC	24276
NAICP	6010/200.7	Sodium	0.18	mg/l	10/25/02	AAK	24517
8260-COLUME	3I 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020 Lab Number 02-10829: Page 1

#### - CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

Lab Number 02-10829 - Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	I 8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538
	8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	trans-1,2-Dichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,1,2-Trichloroethane	< 0.5	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	< 1	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10829: Page 2

- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES

**COLUMBUS OPERATIONS** 

Lab Number 02-10829 - Continued from Previous Page

		_			Analysis		
Test Group	EPA Method	Test	Result	Units	Date	Analyst	WS#
8260-COLUMB	I 8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	< 1	ug/l	10/21/02	DCS	24538
	8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538

End of Report

Report Approved By:

#### - CERTIFICATE OF ANALYSIS -

Date Reprinted: 08-Nov-02

Original Report Date: 30-Oct-02

#### ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

City of Columbia City

Groundwater Monitoring 1171 South Line Street

Columbia City, IN 46725-2398

Attn: Michael Leone (IH)

American Analytical Lab #: 02-10830

Sample ID: Trip Blank

Date Submitted to Lab: 10/16/02

Date Logged-In: 10/16/02

Client Project #: 27453

Matrix: Water

- SAMPLE COLLECTION INFORMATION -

Date: 10/15/02

Time

By: Lab

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUME	BI 8260	Acetone	< 100	ug/l	10/21/02	DCS	24538
	8260	Acrylonitrile	< 50	ug/l	10/21/02	DCS	24538
	8260	Benzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromodichloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromoform	< 5	ug/l	10/21/02	DCS	24538
	8260	Bromomethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon disulfide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Carbon tetrachloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Chlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloroethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Chloroform	< 5	ug/l	10/21/02	DCS	24538
	8260	Chloromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromo-3-chloropropane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	Dibromochloromethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dibromoethane (EDB)	< 5	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10830: Page 1

- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES •

**COLUMBUS OPERATIONS** 

Lab Number 02-10830 -Continued from Previous Page

Test Group	EPA Method	· Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	1 8260	Dibromomethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,4-Dichlorobenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	Trans-1,4-Dichloro-2-Butene	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	cis-1,2-Dichloroethene	< 0.5	ug/l	10/21/02	DCS	24538
	8260	trans-1,2-Dichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	1,2-Dichloropropane	< 1	ug/l	10/21/02	DCS	24538
	8260	cis-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	trans-1,3-Dichloropropene	< 5	ug/l	10/21/02	DCS	24538
	8260	Ethylbenzene	< 5	ug/l	10/21/02	DCS	24538
	8260	2-Hexanone	< 50	ug/l	10/21/02	DCS	24538
	8260	Methyl ethyl ketone	< 10	ug/l	10/21/02	DCS	24538
	8260	Methyl Iodide	< 10.0	ug/l	10/21/02	DCS	24538
	8260	4-Methyl-2-pentanone (MIBK)	< 50	ug/l	10/21/02	DCS	24538
	8260·	Methylene chloride	< 5	ug/l	10/21/02	DCS	24538
	8260	Styrene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,2,2-Tetrachloroethane	< 5	ug/l	10/21/02	DCS	24538
	8260	Tetrachloroethene	< 5	ug/l	10/21/02	DCS	24538
	8260	Toluene	< 5	ug/l	10/21/02	DCS	24538
	8260	1,1,1-Trichloroethane	< 1	ug/l	10/21/02	DCS	24538
	8260	1,1,2-Trichloroethane	< 0.5	ug/l	10/21/02	DCS	24538
	8260	Trichloroethene	< 1	ug/l	10/21/02	DCS	24538
	8260	Trichlorofluoromethane	< 10.0	ug/l	10/21/02	DCS	24538
	8260	1,2,3-Trichloropropane	< 5	ug/l	10/21/02	DCS	24538
	8260	Vinyl acetate	< 50	ug/l	10/21/02	DCS	24538
	8260	Vinyl chloride	< 1	ug/l	10/21/02	DCS	24538

Ohio Lab Approval # 4032 - Ohio VAP Certificate # CL0042 - US EPA Lab # OH0020

Lab Number 02-10830: Page 2

- CERTIFICATE OF ANALYSIS -

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

Lab Number 02-10830 -Continued from Previous Page

Test Group	EPA Method	Test	Result	Units	Analysis Date	Analyst	WS#
8260-COLUMB	I 8260	Xylene, Total	< 5	ug/l	10/21/02	DCS	24538

End of Report

Report Approved By:

ANALYTICAL SCIENCES • COLUMBUS OPERATIONS

# AMERICAN ANALYTICAL LABORATORY INTERNAL STANDARD AND SURROGATE RECOVERY REPORTS

COMPILED BY: JOSEPH R. CHRISTOPHER QA/QC MANAGER

## Internal Standard Recovery Low Level Volatiles

				Fluorobenzene
	Sample Name	Data File Name	Retention Time	(# 1) Target Response
21 Oct 2002 9:42 am	blank	BLANK01.D	13.1	125515
21 Oct 2002 4:49 pm	02-10830	D1021D01.D	13.1	730544
21 Oct 2002 4:49 pm	02-10829	D1021D02.D	13.1	705042
21 Oct 2002 4:49 pm	02-10828	D1021D03.D	13.1	1116742
21 Oct 2002 5:30 pm	02-10827	D1021D04.D	13.09	1120254
21 Oct 2002 6:10 pm	02-10826	D1021D05.D	13.09	914847
21 Oct 2002 6:51 pm	02-10825	D1021D06.D	13.1	884371
21 Oct 2002 7:32 pm	02-10824	D1021D07.D	13.1	868884
21 Oct 2002 8:06 pm	02-10830 Dup	D1021D08.D	13.1	1018244
21 Oct 2002 11:59 ar	5 ug/l std	std05.D	13.1	1196880
		LCL Area	12.6	598440
		UCL Area	13.6	2393760

## Volatile Surrogate Coumpound Recovery

## VOC Waters

Lab#	Surrogate Cmpd.	% recovery	Range
02-10826	1,2-dce-d4	100	76-114
	toluene-d8	98	88-110
	4-bfb	104	86-115
02-10826 Dup	1,2-dce-d4	101	76-114
	toluene-d8	97	88-110
	4-bfb	98	86-115
02-10827	1,2-dce-d4	101	76-114
	toluene-d8	98	88-110
	4-bfb	102	86-115
02-10827 x10dl	1,2-dce-d4	102	76-114
-	toluene-d8	99	88-110
	4-bfb	101	86-115
		·	
02-10828 x10dl	1,2-dce-d4	103	76-114
	toluene-d8	99	88-110
[	4-bfb	101	86-115
	·		
02-10828dup x10dl	1,2-dce-d4	103	76-114
	toluene-d8	. 99	88-110
·	4-bfb	101	86-115

## Volatile Surrogate Coumpound Recovery

Lab #	Surrogate Cmpd.	% recovery	Range	
02-10824	4-Bromoflourobenzene	81	80-120	
	1,2-Dichlorobenzene-d4	88	80-120	
				_
02-10825	4-Bromoflourobenzene	80	80-120	]
	1,2-Dichlorobenzene-d4	89	80-120	]
				<u> </u>
02-10826	4-Bromoflourobenzene	80	80-120	
	1,2-Dichlorobenzene-d4	87	80-120	
				<u></u>
02-10827	4-Bromoflourobenzene	70	80-120	Surr out.
	1,2-Dichlorobenzene-d4	93	80-120	
				_
02-10828	4-Bromoflourobenzene	54	80-120	Surr out.
	1,2-Dichlorobenzene-d4	81	80-120	]
				_
02-10829	4-Bromoflourobenzene	83	80-120	]
	1,2-Dichlorobenzene-d4	90	80-120	
·			<del></del>	
02-10830	4-Bromoflourobenzene	81	80-120	_
	1,2-Dichlorobenzene-d4	88	80-120	]

Internal Standard Recovery Volatiles
Fluorobenzene

			i idolobeli.	20110	1,2-0,0,10,000	HZCHC-UT
Date Acquired	Sample ID	Data File	(# 1) Target Response	Retention Time	(# 2) Target Response	Retention Time
10/22/20029:19	BLANK	BLANK01.D	615841	9.27	184584	19.11
10/22/200210:58	cal std 50 std	ALTSTD.D	670321	9.27	227683	19.11
10/22/200210:25	cal std 50 std	LCSWW.D	662662	9.27	226152	19.12
10/22/200211:44	02-10826	S1022W01.D	654337	9.27	196459	19.12
10/22/200212:17	02-10827	S1022W02.D	646055	9.27	196580	19.12
10/22/20021:04	02-10826 Dup	S1022W03.D	627928	9.27	197273	19.12
10/22/20021:40	02-10827 x10dl	S1022W04.D	608525	9.27	190838	19.12
10/22/20022:39	02-10828 x10dl	S1022W05.D	601853	9.27	188911	19.12
10/22/20023:15	02-10828 Dup x10di	S1022W06.D	598867	9.27	186561	19.12
10/22/20029:52	cal std 50 std	STD050.D	644829	9.27	227466	19.12
		LCL Area	322415	8.77	113733	18.62
		UCL Area	1289658	_ 9.77	454932	19.62

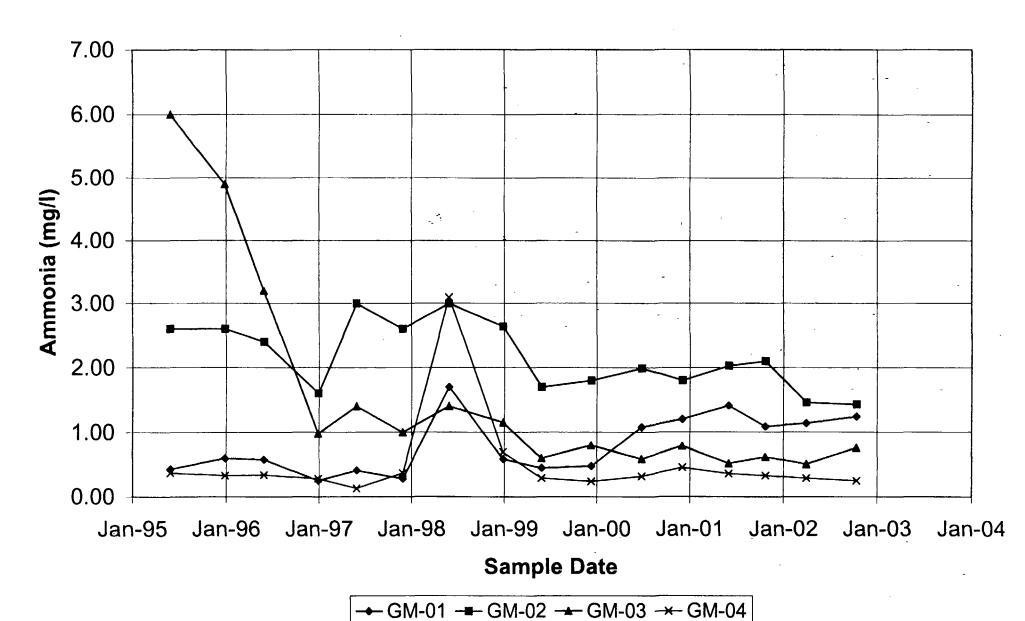
**LEGEND** 

R.T.= Retention time

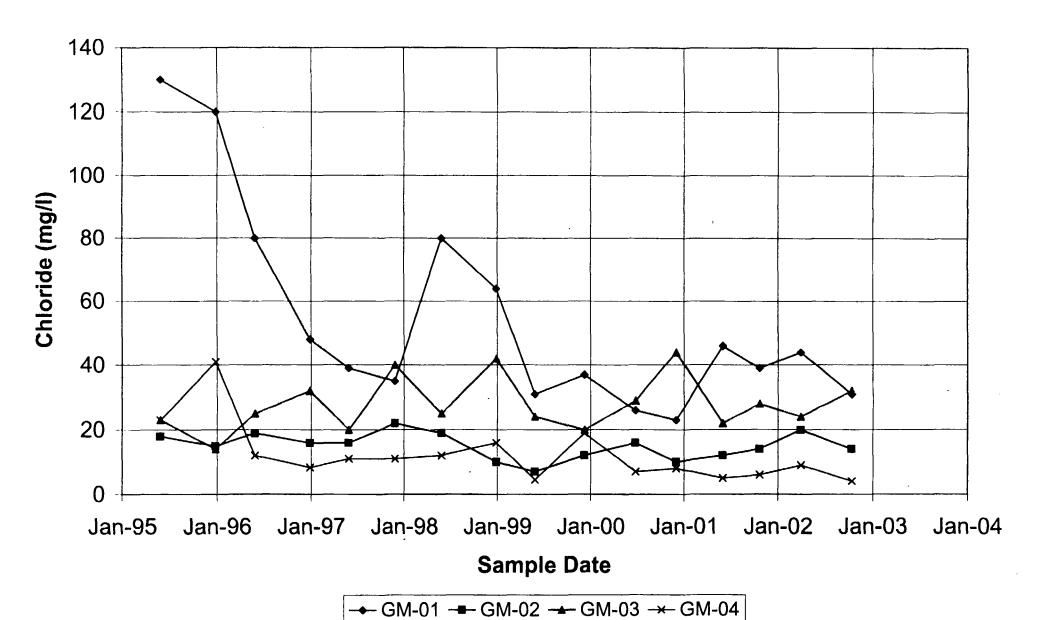
I.S.#= Internal Standard Number

## ATTACHMENT 3 TIME-VERSUS-CONCENTRATION PLOTS

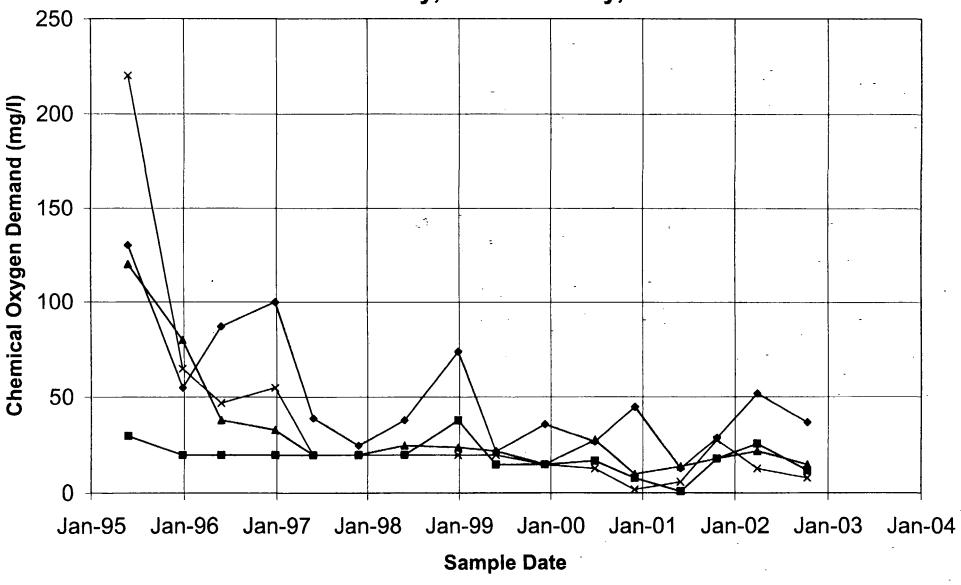
# Ammonia Groundwater Concentrations WRR Facility, Columbia City, IN



# Chloride Groundwater Concentrations WRR Facility, Columbia City, IN

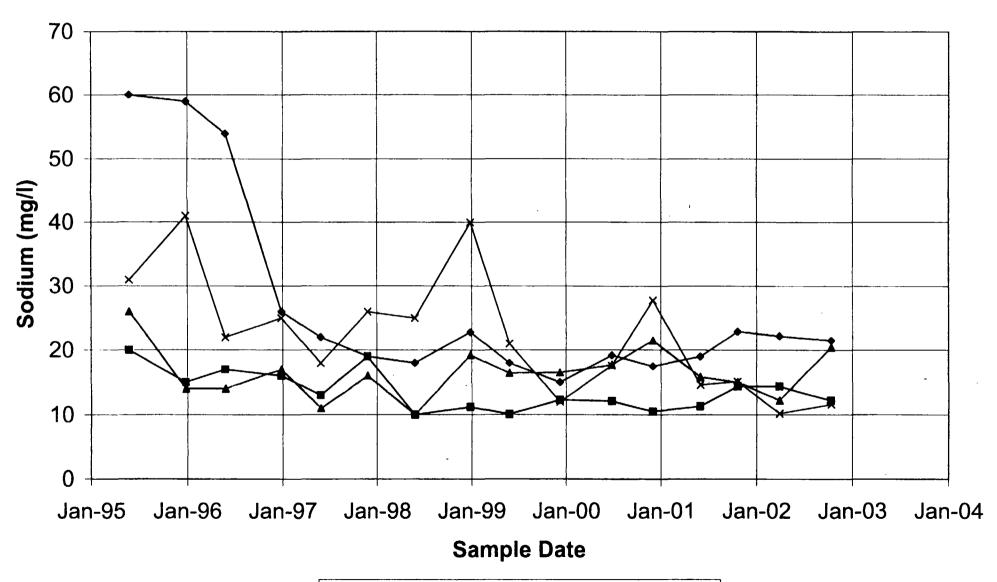


# Chemical Oxygen Demand Groundwater Concentrations WRR Facility, Columbia City, IN



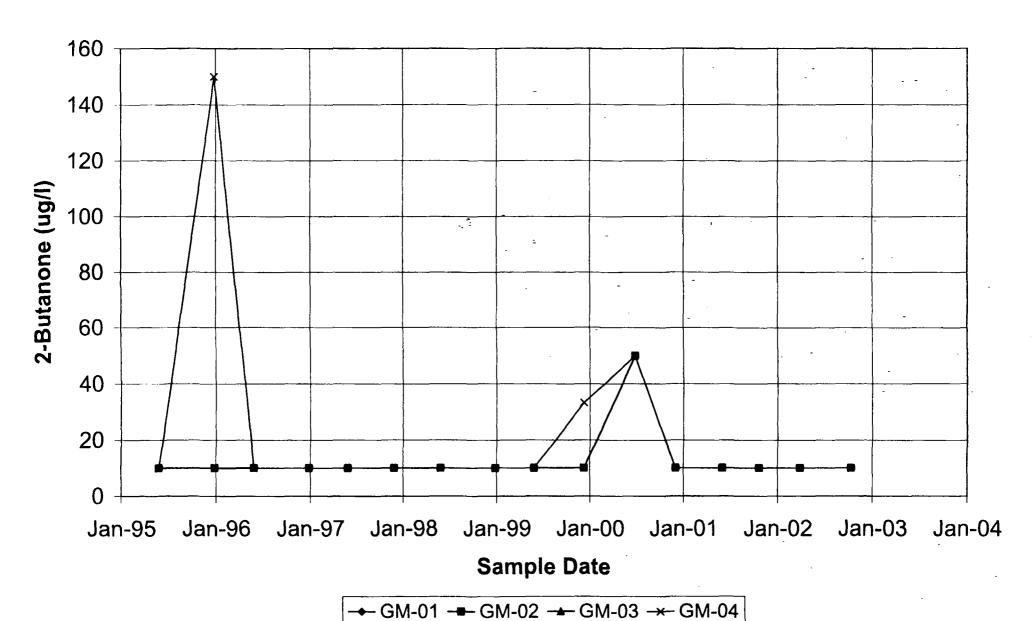
→ GM-01 - GM-02 - GM-03 - GM-04

# Sodium Groundwater Concentrations WRR Facility, Columbia City, IN

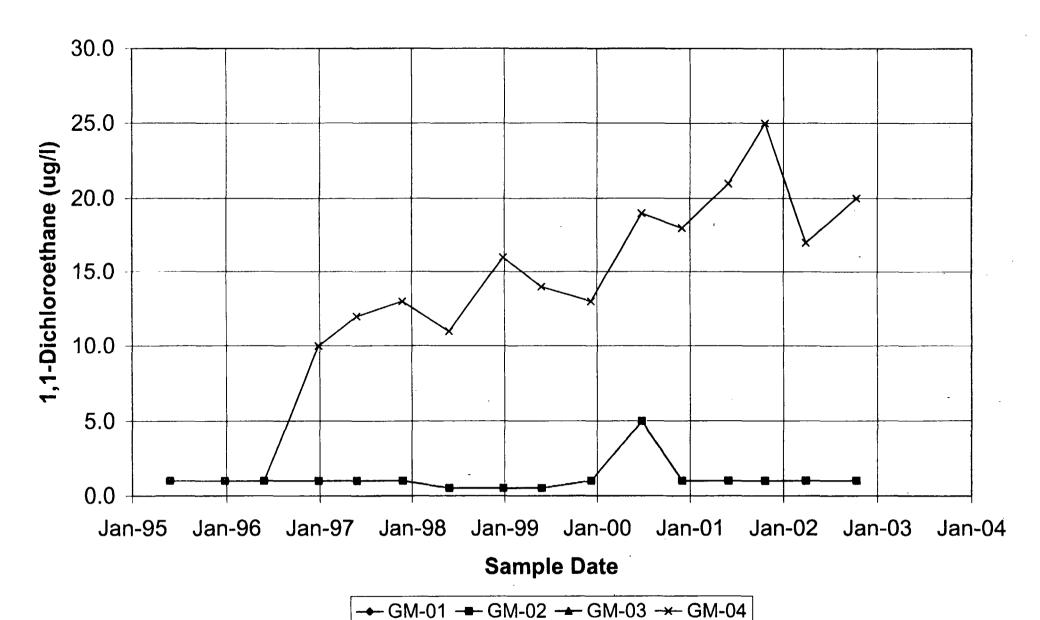


→ GM-01 - GM-02 - GM-03 - GM-04

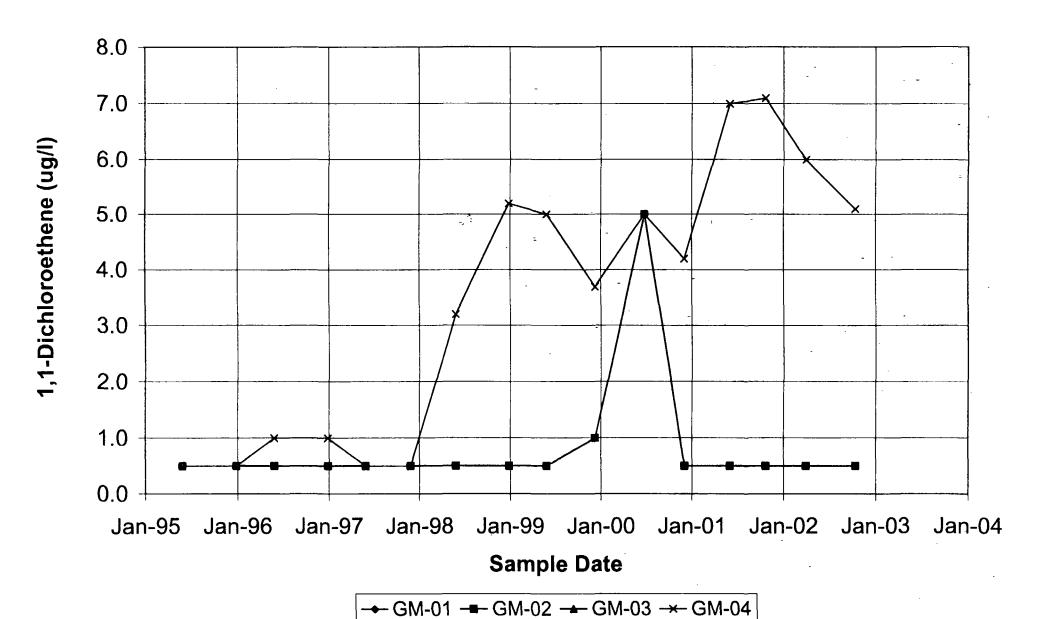
# 2-Butanone (MEK) Groundwater Concentrations WRR Facility, Columbia City, IN



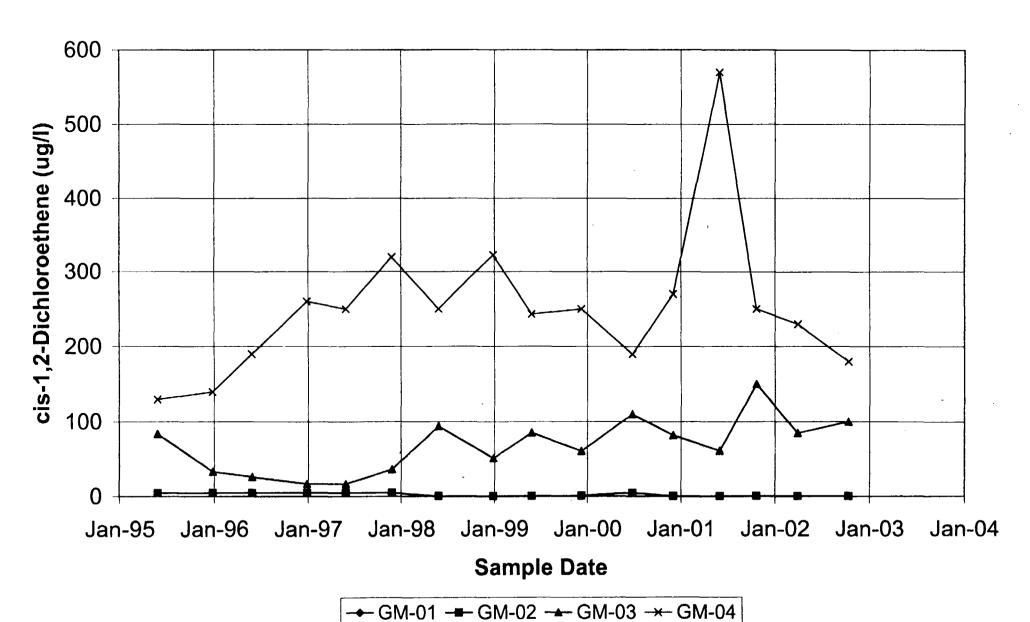
# 1,1-Dichloroethane Groundwater Concentrations WRR Facility, Columbia City, IN



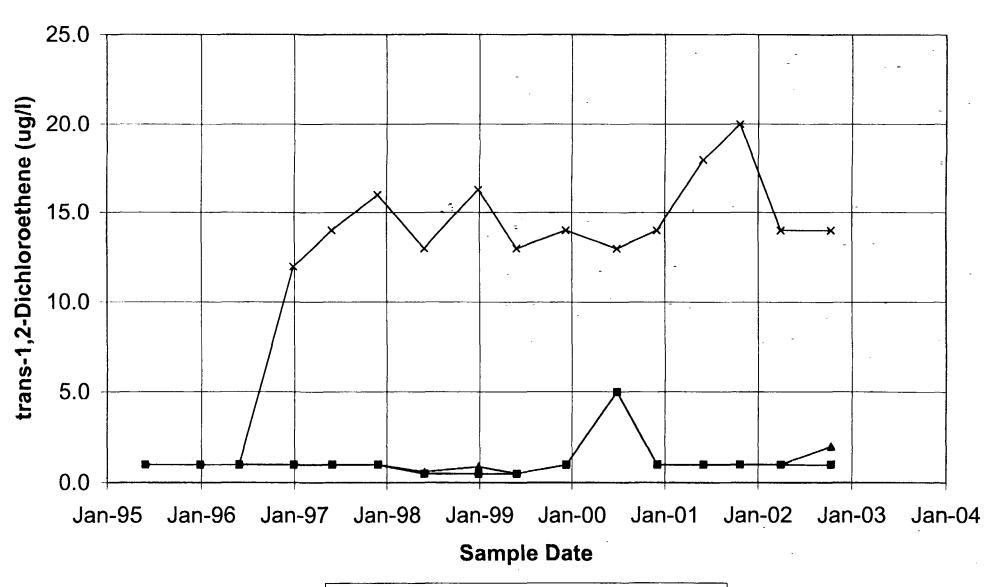
# 1,1-Dichloroethene Groundwater Concentrations WRR Facility, Columbia City, IN



# cis-1,2-Dichloroethene Groundwater Concentrations WRR Facility, Columbia City, IN

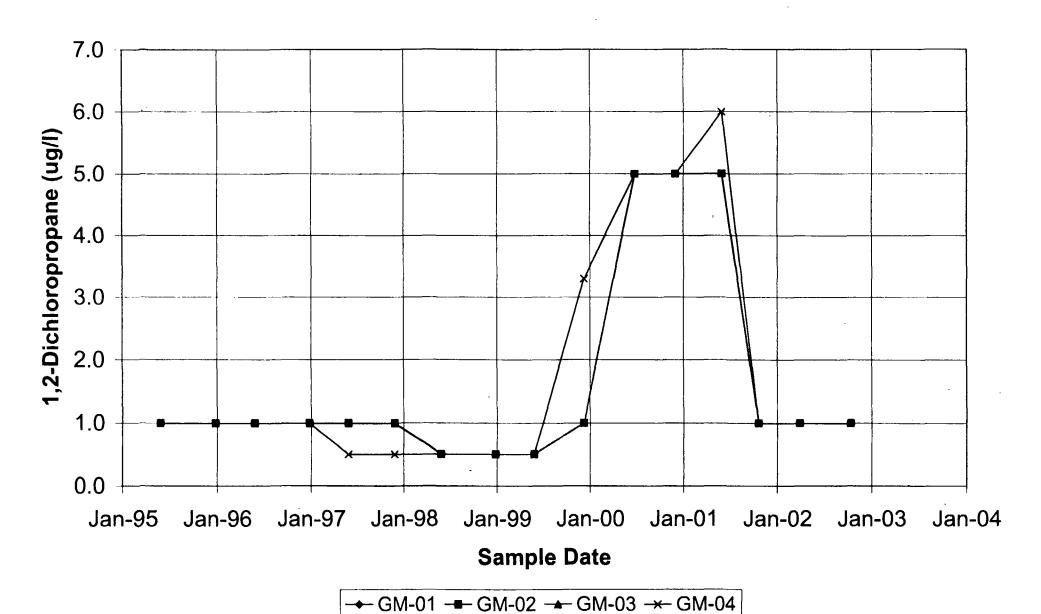


trans-1,2-Dichloroethene Groundwater Concentrations WRR Facility, Columbia City, IN

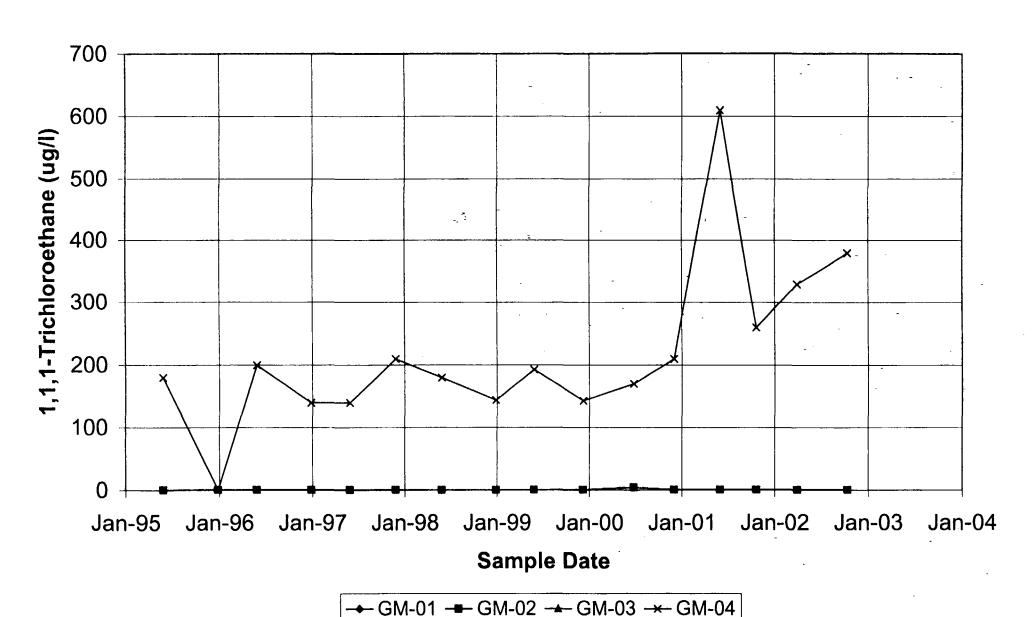


→ GM-01 → GM-02 → GM-03 → GM-04

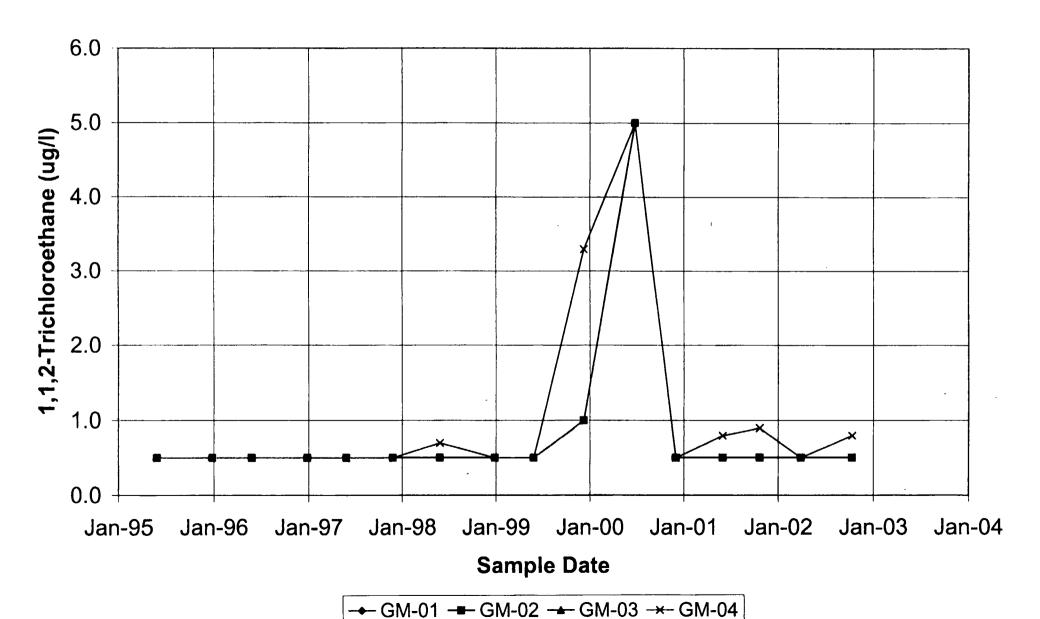
# 1,2-Dichloropropane Groundwater Concentrations WRR Facility, Columbia City, IN



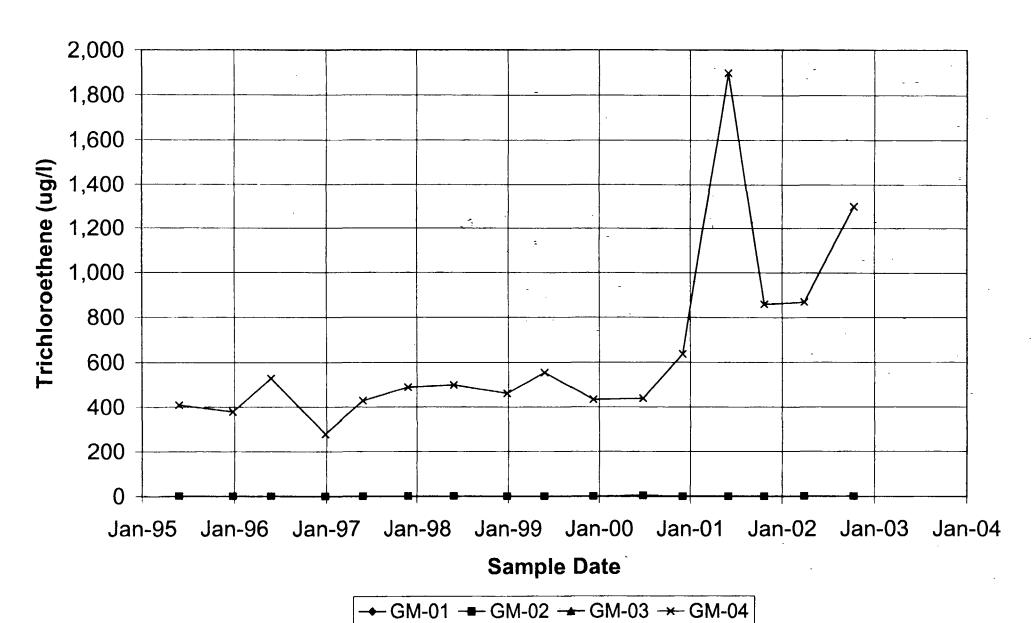
# 1,1,1-Trichloroethane Groundwater Concentrations WRR Facility, Columbia City, IN



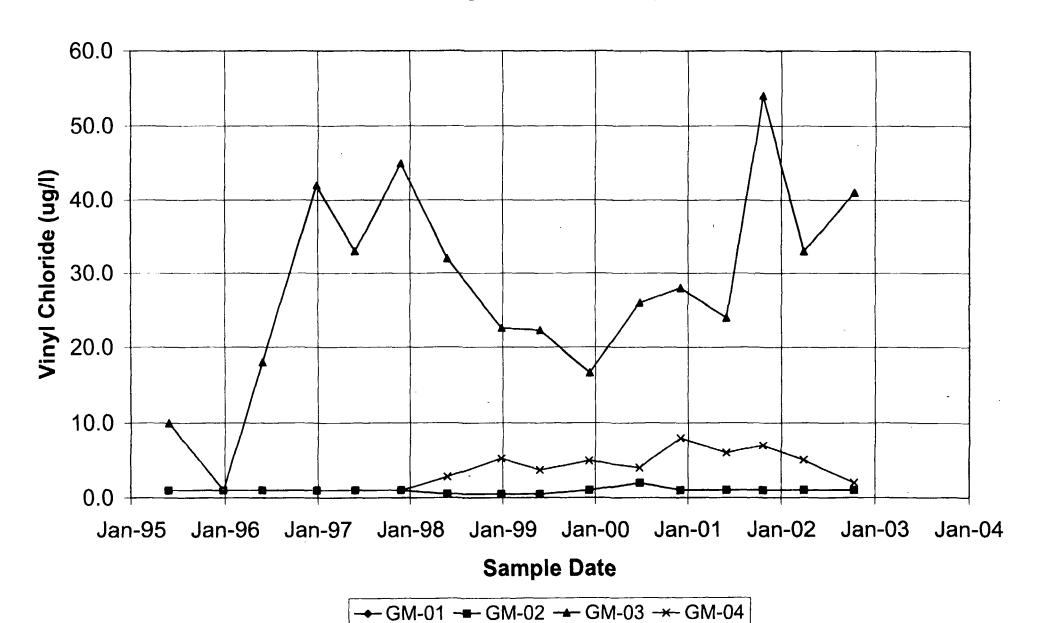
# 1,1,2-Trichloroethane Groundwater Concentrations WRR Facility, Columbia City, IN



# Trichloroethene Groundwater Concentrations WRR Facility, Columbia City, IN



# Vinyl Chloride Groundwater Concentrations WRR Facility, Columbia City, IN



## Appendix B



#### APPENDIX B

#### DATA VALIDATION REPORT

## Wayne Reclamation and Recycling Columbia City, Indiana

Soil, groundwater, surface water, air, and associated quality control (QC) samples were collected from the Wayne Reclamation & Recycling site in Columbia City, Indiana between July 19 and December 13, 2002. The samples were analyzed by TestAmerica Laboratories, Inc. of Indianapolis, Indiana for one or more of the following parameters: volatile organic compounds (VOCs) in air by United States Environmental Protection Agency (U.S. EPA) Method TO-14; and in water, VOCs by U.S. EPA Method SW846 8260B, dissolved (filtered in the field) metals by U.S. EPA Methods SW846 6010B/7470A, total metals by U.S. EPA Method 200.8, total cyanide by U.S. EPA Method 335.4, biological oxygen demand by U.S. EPA Method 405.1, chemical oxygen demand by U.S. EPA Method 410.4, surfactants by U.S. EPA Method 425.1, ammonia as nitrogen by U.S. EPA Method 350.1, total Kjeldahl nitrogen by U.S. EPA Method 351.2, nitrate and nitrite as nitrogen by U.S. EPA Method 353.2, oil and grease by U.S. EPA Method 1664A, total phenols by U.S. EPA Method 420.2, total phosphate by U.S. EPA Method 365.2, total suspended solids by U.S. EPA Method 160.2, total solids by U.S. EPA Method 160.3, potassium by U.S. EPA Method 200.7, and polychlorinated biphenyls by U.S. EPA Method 608.

Laboratory analytical results were evaluated in accordance with the U.S. EPA Contract Laboratory Program (CLP) National Functional Guidelines (NFG) for Organic Data Review (October 1999), the U.S. EPA CLP NFG for Inorganic Data Review (July 2002), and the analytical methods. The analytical data were validated and qualified based on the results of the data evaluation parameters and/or the QC sample results provided by the laboratory.

The following summarizes the review of the analytical data that did not meet the QC criteria:

- The initial calibration associated with the VOC analysis of sample delivery groups (SDGs) 02.03355, 02.03839, 02.04628, 02.05562, and 02.05160 indicated percent recoveries outside the acceptance criteria for 1,2,4-trichlorobenzene and hexachloro-1,3-butadiene. The associated samples were flagged "J" as estimated for these compounds.
- The method blank associated with the VOC analysis of SDG 02.03356 indicated the presence of hexachlorobutadiene. Since this compound was not detected in the associated samples, no flags were issued.
- The samples from SDG 02.04619 were received eight days after sampling at ambient temperature. Because of the high sample temperature, the samples were flagged "R" as rejected for all analyses.
- The method blank associated with the analysis of SDG 02.05103 indicated the presence of naphthalene and 1,2,3-trichlorobenzene. Since neither compound was detected in the associated samples, no flags were issued.
- The matrix spike/matrix spike duplicate (MS/MSD) associated with the metals analysis of SDG 02.05103 indicated percent recoveries outside the acceptance criteria with a high bias for barium, cadmium, chromium, lead, nickel, and zinc. Barium and zinc were detected in the associated sample; however, no detections of cadmium, chromium, lead, or nickel were found. Therefore, the associated sample was flagged "J" as estimated for barium and zinc.
- The MS/MSD associated with the VOC analysis of SDGs 02.05563 and 02.05976 indicated a percent recovery outside the acceptance criteria with a low bias for trichloroethene (TCE). Because the original sample concentrations were greater than ten times the spike amount, no flags were issued for TCE.

- The laboratory control sample (LCS) associated with the VOC analysis of SDG 02.05562 indicated percent recoveries outside the acceptance criteria with a high bias for 1,1,2,2-tetrachloroethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, and 1,4-dichlorobenzene. Since this reflects a high bias, and no detections of the associated compounds were found, no flags were issued for these compounds.
- The LCS associated with the VOC analysis of SDG 02.05971 indicated percent recoveries outside the acceptance criteria with a low bias for 1,2,4-trichlorobenzene and hexachloro-1,3-butadiene. Since this reflects a low bias, the associated samples were flagged "J" as estimated for these compounds.
- The method blank associated with the VOC analysis of SDG 02.05102 indicated the presence of naphthalene and 1,2,3-trichlorobenzene. Since neither of these compounds was detected in the associated samples, no flags were issued.
- The MS/MSD associated with the metals analysis of SDG 02.05105 indicated
  percent recoveries outside the acceptance criteria with a high bias for calcium
  and magnesium. Since this reflects a high bias, and calcium and magnesium
  were detected in the associated sample, the sample was flagged "J" as
  estimated for these compounds.
- The initial calibration verification (ICV) associated with the VOC analysis of SDG 02.05105 indicated a percent recovery outside the acceptance criteria with a low bias for iodomethane. Since this reflects a low bias, the associated samples were flagged "J" as estimated for iodomethane. The ICV also indicated a percent recovery outside the acceptance criteria with a high bias for 1,2-dibromo-3-chloropropane. Since this reflects a high bias, and the

compound was not detected in the associated samples, no flags were issued for 1,2-dibromo-3-chloropropane.

- The continuing calibration verification (CCV) associated with the VOC analysis of SDG 02.05105 indicated a percent recoveries outside the acceptance criteria with a low bias for 2-chloroethyl vinyl ether, naphthalene, and 1,2,3-trichlorobenzene. Since this reflects a low bias, the associated samples were flagged "J" as estimated for these compounds. The CCV also indicated percent recoveries outside the acceptance criteria with a high bias for acrolein and 2-methylnaphthalene. Since this reflects a high bias, and the compounds were not detected in the associated samples, no flags were issued for these compounds.
- The CCV associated with the VOC analysis of SDG 02.05922 indicated percent recoveries outside the acceptance criteria with a low bias for iodomethane and 1,2,3-trichlorobenzene. Since this reflects a low bias, the associated samples were flagged "J" as estimated for these compounds. The same CCV indicated a percent recovery outside the acceptance criteria with a high bias for tetrachloroethene. Since this reflects a high bias, samples with detections of tetrachloroethene were flagged "J" as estimated.
- The LCS associated with the VOC analysis of SDG 02.05922 indicated a
  percent recovery outside the acceptance criteria with a low bias for acrolein.
  Since this reflects a low bias, the associated samples were flagged "J" as
  estimated for acrolein.

Based on the results of this data validation, all data are considered valid and complete as qualified.

J:/jobs/3868-Wayne RR/01 - O&M Activities/6 - Reports/Progress Reports/progrpt15-July-Dec 2002/Appendix B - data valid rpt.doc

## Appendix C



#### Summary of Major Field Activities July Through December 2002 Wayne Reclamation and Recycling Columbia City, Indiana

#### Date **Description of Field Activities and Events** July 2002 Survey of repaired monitoring wells MW-13S, MW-13D, and MW-19S completed. Site progress meeting and site visit conducted; attended by representatives of the U.S. EPA, IDEM, Columbia City, EMI, MWH, and InSite. Monthly groundwater treatment system and air treatment system sampling conducted. August 2002 Monthly groundwater treatment system and air treatment system sampling conducted. September 2002 Monthly groundwater treatment system and air treatment system sampling conducted. Air compressor work was conducted, to replace desiccant media, rebuild two desiccant dryers, replace worn components, replace two transducers, and repair valve-positioning equipment. October 2002 SVE air flow rates measured throughout month, in SE and AST Areas. Maintenance of extraction pump check valve completed. Semi-annual groundwater (from wells) and groundwater treatment system effluent sampling conducted. Semi-annual air sampling conducted. Monthly groundwater treatment system and air treatment system sampling conducted. November 2002 Routine recovery well pump and line cleaning, plus cleaning of collection piping from the wells to the pretreatment plant, completed. Several pumps repaired. Monthly groundwater treatment system and air treatment system sampling conducted. Four piezometers (PZ-1 through PZ-4) and three SVE wells (SVE 56 through 58) December 2002 installed. New SVE wells connected to extraction system. Recovery well RW-3 cleaned and rehabilitated. Blue River surface water samples collected for laboratory analysis from three locations (adjacent to PZ-1, PZ-2, and PZ-4). Collected samples from soil cutting drums for laboratory analysis. Monthly groundwater treatment system and air treatment system sampling conducted. Fences expanded and/or repaired where necessary from piezometer and well installation activities, and from trespassing incident discovered during a routine site check. Baseline air sampling of the SVE line in the AST Area completed, immediately after turning on the new SVE wells.

Three new totalizers were installed; one totalizer was installed on each of the

three existing pipelines that bring groundwater into the treatment building.

# Appendix [

## Appendix D





### FIELD BORING LOG

Page 1 of \_\_\_2\_\_\_

Facil									Boring Project			SB-F	PZ-1	
Drilling Company Stearns Drilling, Inc. State Plane Driller's Name Jerry and Ryan Drill Rig Geoprobe Local Grid Lo Drill Method Direct Push							State Plane Local Grid Location			 N S				
1/4 of 1/4 of Set  Sample  Water Level: wet at 17.9' Hammer Torque Surface Elevation								Во	_, T rehole Di Screen		E/W			
Sample No.	Đ.T		ws on Tipler	Sample Recovery	en	Logg	er: <u>DMK</u>	02	EditorEnd Date:12/10/02		Penetrometer (Tons/sq. ft.)		vel- Fines	
Sampl	Moisture	0/6	6/12	Semple	N Value			VISUAL CLAS	SIFICATION		Peneti (Tons/	OF C	% Gravel- Sand-Fines	Remarks
		2	3			L				_				
		3_	5	0.9'						_		2.3		_
	М	1	2				0-5.2':	Brown gravelly s low plastic to nor	_					
		2	1	1'				more cohesive w	_		4.7		No odor.	
		3	4			5				5 -				
	D	5	7	1.7'		F	5.2-7.7':	Brown fine to me	edium silty sand	i.		11.6		
		4	8					iron staining, loo	•					Slight odor below 6'.
		8	8	1.3'					<del></del>			20.3		Slight odor.
	D	4	6							_				
	М	6	9	1.3'		10				10		63.8		Slight odor.
		5	6				7.7-26':	Brown to gray sil medium firm, low		_				
		10	11	1.8'		_		(continued on ne	ext page)	<del>-</del>		104		
		4	6		-					_				Noticeable odor from
		11		1.7'						-		3.6		12-14'.
		3	5			15				15				



### FIELD BORING LOG

Page 2 of \_\_\_\_2\_\_

F <b>a</b> cil Loca		ect Nan	ne			Reclamation & R ia City, Indiana	ecycling Site		Boring No. SB-P				Z-1	
Drille Drill	ller's Name Jerry and Ryan							N, [	J <sub>s</sub>		E			
		Sample							1/4 of 1/4 of Section, T N,R E/M  Borehole Diameter  Surface Elevation at Screen					
Sample No.	bre	I	vs on npler	Sample Recovery	Value		2	EditorEnd Date:12/10/02		Penetrometer (Tons/sq. ft.)		% Gravel- Sand-Fines		
Samp	Moisture	0/6	6/12	Sample	N Va		VISUAL CLAS	SIFICATION		Penel (Tons	<u>6</u>	% Gra	Remarks	
	w	9	9	1.7'			Some gravel fror	n 17-19.2'.	-		1.4			
_		8	8	2'			Some sand from	17.9-18'.			1.7			
		3	5	1.6		20	Some sand at 19	9.2' and 19.7'.	20		0.1			
		4	6	1.6'					- -		2.1			
		7	12	1.9'					_		1.3			
		4	7											
		7	11	1.7'					_		3.3			
		2	3			25	Gravelly layers a	t 25' and 25.8'.	25					
ļ 		5	4	1.6'			End of boring @	06'			1.3			
							End of boning w	20	_	· · · · · · · · · · · · · · · · · · ·				
		_		_					-					
<u></u>				<u> </u>					_					
				<u> </u>		30			30					



# FIELD BORING LOG

Page 1 of \_\_\_1\_\_\_

Facility/Project Name Location				<u>-</u>	Wayne Reclamation & Recycling Site Columbia City, Indiana						Boring No. SB- Project No.			PZ-2	
Drille	•	ne		Jerr Geo	y ar prol	nd Ry be			State Plane Local Grid Location						
Drill Method   Direct Push															
Wate	r Level	: wet a	t 11.8'		· -	Ha T	ammer Torque		Surface Elevation —		at S	Screen			_
Ç			npler	covery					Editor End Date:		neter .ft.)		. se		
Sample No.	Moisture	0/6	6/12	Sample Recovery	N Value			VISUAL CLAS			Penetrometer (Tons/sq. ft.)	PłO	% Gravel- Sand-Fines	Remarks	i
0)	M		-	ιÿ		ļ	0-0 8'·	Brown silty clay,	firm medium nla	estic	ш.		% W		_
	IVI	4	6					Brown sandy silty		<u> </u>					
	М							stiff, low plastic.							
		6	7	1.8'		<u> </u>	4507	Durania allan arasal	£:	_		1			
	М	3	6			-	1.5-3.7":	Brown silty sand, grained, loose, n		_					
			-			_		gramou, rocce, ri	on plastic.	_					
	M	6	7	1'				Brown sandy silty		olastic.		1			
	D	5	6			,	4.2-5': 5	Brown silty sand, fine-grained, loos	•						
		7	6	1.7'						_		0			
										_					
	D	3	6			_	5-10':	Brown fine to me	· · · · · · · · · · · · · · · · · · ·	_					
	<u></u>	9	9	0.8'				loose, non-plastic At 7', brown to gr	ay gravelly sand	d, _		1			
		_	_					loose, non-plastic	С.	_					
		5	7			$\vdash$				_					
		7	9	0.2'		11	0			10		1		No odor	
	М	5	7				10-11.5':	Gray to Brown si	Ity clay, firm to					to soil or	
	-						<u> </u>	stiff, medium pla	•					ground-	
		8	9	2'		-				_		3		water.	
		3	5							_					
	w	8	10	1.4'		_	11.5-17':	Brown sand, med	dium grained.	_		2			
			1					loose, non-plastic	c, some	_					
		4	7	-		- 1	5	iron staining, san coarse and poorl		15 _					
		7	7	1.5'				16.5 to 17'.	,	_		2			
		1	2	0.8'								5			
								End of Boring @	17'						
					<u> </u>	-								-	
					<u>.</u>					_				<u> </u>	
										_					
		<u> </u>	<u> </u>	ļ		_	20			20 -			ļ	<u> </u>	



## FIELD BORING LOG

Page 1 of \_\_\_1\_\_

Facility/Project Name				Wayne Reclamation & Recycling Site Columbia City, Indiana						Boring Project			SB-F	PZ-3		
Drilli	ng Com	pany		Stea	arns	Dr	illing,	Inc.		State Plane		N.			· F	
ļ	er's Nam						Ryan						) N			<u>_</u>
Drill		_		Geo						Local Grid Location						w
	Method			Dire			า									
										1/4 of 1/4 of Section, T N,R E/					RE/W	
Wate	er Level	: weta	t 15'				Sample Hamme	r Torque		Borehole Diameter Surface Elevation at Screen					er 	
	23,0,		ws on	چ		Τ				Editor		T	3.331			
ġ Ž			npler	lecove	_	1			)2			mete.	}	- <del>j</del> e 86	ł	
Sample No.	Moisture	a		Sample Recovery	Value	$\vdash$						Penetrometer (Tons/sq. ft.)		% Gravel- Sand-Fines	D	
Sa	ž	0/6	6/12	Sar	z			0 4 5	VISUAL CLAS			<b>8</b> E	PID	Sar	Remarks	
	М	2	2					0-1.5':	Gray sand silty of gravel, soft, med			-				
	IVI		-	-		-			graver, soit, med	num piasuu.	_	-				
	М	4	5	1.8'				1.5-2':	Gray silty clay, f	rm, medium plas	stic.		1			
		_				_										
		5	6			_					_					
	D	6	9	1.2'		-		2-7':	Brown fine to me	edium grained	_	1	3			
				-					sand, some iron	staining, some	_					
		4	6			<u></u>	5		roots, loose, nor	n-plastic.	5 _	-				
		6	5	1.7'		-					_	1	2			
			-					<del>.</del>			<del></del>		_	-		
		2_	7								_		ļ			
	D	10	11	1.5'		_		7-11'	Brown to gray sa	andy silty clay			2			
	0		'-	1.5		-		r = 1 l .	with some grave		_	-				
	М	8	8						stiff, medium pla		_	]				
		9	9	1.7		_	10				10	1	1		No odor	
		- J	a	1./		-	10				¹º <b>-</b>	-	<u> </u>		to soil	
		8	8												or	
		F	_	4 -		_		<del>_</del>			_		_		ground-	
		5	6	1.5'		-					_	ļ	1		water.	_
	М	2	2				1	1-15.3':	Gray silty clay w	ith a trace grave	-I,					
		_							soft to stiff, low t	o medium plastic	o		_			_
		5	6	1.3'		_							3			
	w	2	3			_	15				15	]				
													-			
		6	6	1.3'		-					_	ļ	1			
	w	1	1			_	1.5	5.3-20'·	Gray fine to coul	rse grained	_	-				
		<u> </u>	<u> </u>						sand, loose to m	-	_			<del>-</del>		
	<u> </u>	2	2	1.2'					non-plastic.		_		2			
		1	1			_					_	-				
		<u>'</u>		-							_					-
		2	_ 2	1.7'			20				20		2			
I		1	1	[ j					End of Boring @	20'		l .			1	



# FIELD BORING LOG

Page 1 of \_\_\_1\_\_\_

Facil		ect Nan	ne					tion & F ndiana	Recycling Site		Boring Project		_	SB-I	PZ-4
Drille Drill	-	ne		Jerr Geo	y ar pro	nd I be				State Plane N, N N N N N N N N N N N N N N N N N N					E
Drill	Method	- -		Dire	ect F		h Sample			1/4 of 1/4 of Section, T N,R E/W  Borehole Diameter					
Wate	r Leve	: wet a	t 12'	г —	<del>, ,</del>	Т-	Hammer	Torque		Surface Elevation _		at 9	Screen	-	T
Sample No.	g.		ws on inpler	Sample Recovery	9				2	Editor End Date:		Penetrometer (Tons/sq. ft.)		vel-	·
Samp	Moisture	0/6	6/12	Sample	N Value				VISUAL CLAS	SSIFICATION		Penet (Tons	οl	% Gravel- Sand-Fines	Remarks
		5	4								 	<u> </u>			
	М	3	3	1.5'				0-4':	Brown silty clay	with some grave	- -		1		
		15	11						and cobbles, pri low plastic.	imarily firm,	_			-	
		8	9	1'		_	•		,		-		8		
	D	3	5			_	5			<u>.</u>	5				
		7		1.5'		<del></del>			ü		-	-	22		
		8	11					1-17 <sup>1</sup> ·	Brown gravelly	sand sand fine	-				
-		7	8	1.4'				7 17.	to coarse graine medium dense,	ed, non-plastic,	-		3		
-			9	1.4					some slightly cla	ayey horizons,	-		3		
	-	8		-					coarser below 1 medium grained	d again at 13.5',	-		-		
		7	10	1.8			10		coarser again fr with some very		10 _		5		No odor to soil
-	М	8	6			_			of gravel.		_				or ground-
	W	7	7	1.3'		-							1		water.
		5	7								-				
		9	10	1.2'							-		15		
		8	18			_	15				15 ~				
		6	6	1'		_					-		25		
		4	7	0.7'			_						4		
			L		<u> </u>				End of Boring @	<b>0</b> 17'	-		L		
	!					F									
							20				20				
<b>—</b>			<del></del> -	<del>                                     </del>	<del></del>	<del></del>					•	+	<del></del>	<del>                                     </del>	<del> </del>



			JOB NO. 2101374
Facility/Project Name	Local Grid Location of Well N.	□ E.	Well Name
Wayne Reclamation and Recycling Site	ft. S.	ft. 🔲 w.	PZ-1
Type of Well	Grid Origin Location		Date Well Installed
Water Table Observation Well	Lat Lo	ong. or	12/10/2002
Piezometer X	St. Plane ft. N		
	Section Location of Waste/Sor		Well Installed By: (Person's Name and Firm)
Distance Walking Force Manage Course Boundary	1	W.	Jerry and Ryan
Distance Well Is From Waste/Source Boundary	Location of Well Relative to W	aste/Source Sidegradient	Stearns Drilling, Inc.
Potential Source Area ft.	Downgradient	☐ Not Known	
Protective pipe, top elevation ft. MS	]	Cap and lo	ck? Yes X No
		b~	<u></u>
Well casing top elevationft. MS	.————		cover pipe:
Land surface elevation ft. MSI		Inside dian Length:	neter: in. 2.5 ft.
Taile Serial Ser		Material:	Steel 😧
Surface Seal, bottomft. MSL orft.	_ft.\		Other 🗍
F		1.1.1	protection? Yes No
USCS classification of soil near screen:  GP GM GC GW SW X	] SP 🔲 🛴 💄	If yes, do	escribe:
SM SC ML MH CL	ìсн <b>⊓і 189 18</b>	Surface se	al: Bentonite
Bedrock		* · · · · · · · · · · · · · · · · · · ·	Concrete 🗓
O's a seabale should Dive.	7 A	Concrete f	rom 1' bgs to surface Other
Sieve analysis attached?	No	Material be	etween well casing and protective pipe:  Bentonite
Drilling method used: Rotary			Annular space seal
Hollow Stem Auger		<del></del>	Other
Geoprobe Other		Annular sp	
Drilling fluid used: Water ☐ Air		<del></del>	3.5 bags quick-grout to 12 gallons water  Lbs/gal mud weight Bentonite slurry
Drilling Mud None			% Bentonite Bentonite-cement grout
Delition and district control		Walliana (	cu ft volume added for any of the above
Drilling additives used? ☐ Yes 🗓 x	No S	How install	ed: Tremie Tremie Tremie pumped
Describe		l	Gravity 🗓
		Bentonite s	
Source of water:  Municipal water into truck poly tank		/ □1/4 /5	x 3/8 in  □ 1/2 in. Bentonite pellets □ Other □
Midnicipal water into track pory lank	I 🚆 🖁	/ Fine sand	material: Manufacturer, product name & mesh size
ELEVATION DEF			
Bentonite seal, topft. MSL or	<u>-17</u> ft.	Volume ad	ded cu ft material: Manufacturer, product name & mesh size
Fine sand, top ft. MSL or	ft.	Global Filte	er Pack quartz sand
	<u> </u>	Volume ad	
Filter pack, top ft. MSL or 26 -	19 ft.	Well casin	· —
Screen joint, top ft. MSL or 21	. \ 🔞 🛭		Flush threaded PVC schedule 80
Screen joint, top ft. MSL or 21	"	Screen ma	Other
Well bottom ft. MSL or 26	t. <	Screen typ	e: Factory cut X
			Continuous slot
Filter pack, bottomft. MSL or	it.	Manufactu	Other 🗀
Borehole, bottom ft. MSL or 26	ft	Slot size:	0.1 in.
		Slotted len	<del></del>
Borehole, diameterin.	<del></del>	Backfill ma	iterial (below filter pack):
O.D. well casing in.		<del></del>	Other _
5.5. Holl odding			
I.D. well casing			
I hereby certify that the information on this form is true	and correct to the best of my i	knowlege.	
Signature Diago M. Krueger	Firm	Americas Inc	



Facility/Project Name	Local Grid Location of We	<u> </u>	Well Name
•		N DE	PZ-2
Wayne Reclamation and Recycling Site	ft	s. ft. 🗆 w.	<del> </del>
Type of Well	Grid Origin Location		Date Well Installed
Water Table Observation Well	Lat.	Long. or	
Piezometer x	St. Plane	ft. N, ft. E	
	Section Location of Wast	e/Source ☐ E. ☐ W.	Well Installed By: (Person's Name and Firm)
Distance Moll le From Moste/Course Boundary	Location of Well Relative		Jerry and Ryan Stearns Drilling, Inc.
Distance Well Is From Waste/Source Boundary	Upgradient	Sidegradient	Steams Drilling, Inc.
Potential Source Area ft.	Downgradient	☐ Not Known	
	_ •		
Protective pipe, top elevation ft. MS	<u> </u>	Cap and I	ock? Yes X No
Well casing top elevation ft. MS	L	☐ Protective	cover pipe:
<del></del>		Inside dia	• •
Land surface elevation ft. MS	<u> </u>	Length:	2.5 ft.
	البهير ﴿	Material:	Steel 🔽
Surface Seal, bottomft. MSL orft.	— <b>"</b> \\ \  \  \  \  \  \  \  \	Additional	protection?  Yes X No
USCS classification of soil near screen:		1 1	describe:
GP ☐ GM ☐ GC ☐ GW ☐ SW 🔽	1 SP □		
SM SC ML MH CL	] сн 🗍 💮 💆	Surface s	
Bedrock 🔲		. \	Concrete 🗶
Sinus analysis awashada - Tiyas - F	, , ,   <b>(2</b> )	Concrete	from 1' bgs to surface Other
Sieve analysis attached?	No B	Material b	etween well casing and protective pipe:  Bentonite
Drilling method used: 'Rotary			Annular space seal
Hollow Stem Auger	片 🛭		Other 🗆
Geoprobe Other	CH CH CH CH CH CH CH CH CH CH CH CH CH C	Concrete Material b  Annular sp  How insta  Bentonite    1/4 material b  Volume as Filter pack Global Filt Volume as	pace seal: Quick-Grout
			2.5 bags quick-grout to 8 gallons water  Lbs/gal mud weight Bentonite slurry
Drilling fluid used: Water Air		<b>2</b>	
Drilling Mud 🔲 None	M M	<u> </u>	% Bentonite Bentonite-cement grout  cu ft volume added for any of the above
Drilling additives used? ☐ Yes 🗓	] No	How insta	<u> </u>
Drining additives about.	' <sup>``</sup>   <b>3</b>	THE RESIDENCE	Tremie pumped
Describe	📓		Gravity 🔣
	8	Bentonite	seal: Bentonite granules [x]
Source of water:	i B		x 3/8 in. ☐ 1/2 in. Bentonite pellets ☐ Other ☐
Municipal water into truck poly tank	I	Fine sand	material: Manufacturer, product name & mesh size
ELEVATION DEF	TH S		
Bentonite seal, top ft. MSL or 10.3	- 8 ft.	Volume a	dded cu ft
	. \	Filter pack	material: Manufacturer, product name & mesh size
Fine sand, topft. MSL or	ft.	Global Fill	ter Pack quartz sand
Filter pack, top ft. MSL or 17 -	<b>\</b> \	Well casir	dded cu ft ng: Flush threaded PVC schedule 40 x
Titor pack, top	10.0	Won cash	Flush threaded PVC schedule 80
Screen joint, top ft. MSL or 12	ft.		Other 🗀
	7	Screen m	
Well bottom ft. MSL or 17	<sup>ft.</sup> <	Screen ty	· · · · · · · · · · · · · · · · · · ·
Eilter nack bettem (1 MC) or 17	<u>.</u> \(\frac{1}{2}\)	<b>∄:</b> ]	Continuous slot
Filter pack, bottomft. MSL orft.		Manufacti	Other _
Borehole, bottom ft. MSL or 17	ft	Slot size:	0.1 in.
		Slotted ler	<del></del>
Borehole, diameter in.		Backfill m.	aterial (below filter pack): None 🗶
			Other
O.D. well casingin.			
I.D. well casing in.			
	o and parent to the best	al mulinoula aa	
I hereby certify that the information on this form is true Signature	ie and correct to the best Firm	от ту кпомеде.	
Diane M. Krueger		/H Americas, Inc.	
			·



		<del></del>		JOB NO. 2101374
Facility/Project Name	Local Grid Location of W	ell N.	Пс	Well Name
Wayne Reclamation and Recycling Site	ft.	S. ft.	₩.	PZ-3
Type of Well	Grid Origin Location			Date Well installed
Water Table Observation Well	Lat.	Long.	or	
Piezometer x	St. Plane	ft. N	ft. E.	1
, 1020.1101.01 K	Section Location of Wast			Well Installed By: (Person's Name and Firm)
			w.	
Distance Well Is From Waste/Source Boundary	Location of Well Relative	to Waste/Source		Stearns Drilling, Inc.
Distance with the restriction of the second	Upgradient		gradient	Oteanie Diamigi me.
Potential Source Area ft.	Downgradient	_	-	
Protective pipe, top elevation ft. MS			Cap and lo	ck? Yes x
n. W.S.		=7. /	Cap and io	CV
Well casing top elevation ft. MS		┑┡╲╴╭	Protective	cover pipe:
	1	<del> </del>	Inside dian	
Land surface elevationft. MS	- \		Length:	2.5
	البيه		Material:	Steel
Surface Seal, bottomft. MSL or0 - 1	_#< \ \ \		Televis - al	Other
USCS classification of soil near screen:	<del></del>		If yes, do	protection? Yes X
	SP 🔲		n yes, u	escribe.
SM SC ML MH CL	CH 🔂		Surface se	al: Bentonite
Bedrock 🗍				Concrete
	_   📓			rom 1' bgs to surface Other
Sieve analysis attached?	No B		Material be	tween well casing and protective pipe:
Dalling and send upper				Bentonite
Drilling method used: Rotary Hollow Stem Auger	片 / 📓			Annular space seal Other
Geoprobe Other		<b></b>	Annular sp	
	W   <b>3</b>	8		1.5 bags quick-grout to 9 gallons water
Drilling fluid used: Water 🗀 Air				Lbs/gal mud weight Bentonite slurry
Drilling Mud 🔲 None				% Bentonite, Bentonite-cement grout
	ı   📓			cu ft volume added for any of the above
Drilling additives used? ☐ Yes 🗓	No B		How install	
Describe				Tremie pumped Gravity
	📓		Bentonite s	
Source of water:		/ ·	☐ 1/4 in.	Seat: Bentonite granules  3/8 in. 1/2 in Bentonite pellets
Municipal water into truck poly tank				Other
	CH CH CH CH CH CH CH CH CH CH CH CH CH C		Fine sand	material: Manufacturer, product name & mesh s
ELEVATION DEF Bentonite seal, top ft. MSL or 13-	TH		Volume ad	ded cu ft
Deficinite seal, top (t. MSE of	10.5			material: Manufacturer, product name & mesh
Fine sand, toptt. MSL or	ft.、			er Pack quartz sand
				ded cu ft
Filter pack, top ft. MSL or 20 -	13 ft.		Well casing	
		<u> </u>		Flush threaded PVC schedule 80
Screen joint, top ft. MSL or 15	tı.	巖	<u> </u>	Other
Well bottom ft. MSL or 20	. 7		Screen ma Screen typ	<del></del>
Well bottom ft. MSL or 20	·······	<b>∃</b> :	Scieen typ	Continuous slot
Filter pack, bottom ft. MSL or 20	ft	<b>3</b> :1		Other
			Manufactu	<del></del>
Borehole, bottom ft. MSL or 20	ft		Slot size:	0.1
			Slotted len	<u> </u>
Borehole, diameter in.			Backfill ma	iterial (below filter pack): None
O.D. well casing in.				Other
O.D. well casing in.				
I.D. well casing in.				
I hereby certify that the information on this form is true	and correct to the best of	my knowless		
	Firm	my knowlege.		
Diane M. Krueger		VH Americas, Inc.		



Control   Cont						JOB NO. 2101374
Water Table Observation Well   Gird Origin Location   Lat.   Long.	Facility/Project Name	Local Grid Location of W	•	1		
Surface Seal, bottom   Surface Searce   Surface   Surface Searce   Surface Searce   Surface Searce   Surface Searce   Surface   Surface Searce   Surface Searce   Surface Searce   Surface   Surface Searce   Surface   Surface Searce   Surface   Surface Searce	Marine Pealemetics and Reguline Site			64	Hæi	PZ-4
Lat. Long. or   12/9/2002   St. Pfane   Fi.N.   Fi.E.   Section Location of Waster/Source   Fi.N.   Jerry and Rysian   Jerry and Rysi		<del></del>	j 3.	п.	<u> </u>	
Piezometer   S. Piane		_				
Section Location of Waster/Source   E   Well Instituted By (Person's Name and Firm)	<u> </u>					12/9/2002
Distance Well is From Waster/Source Boundary    Distance Well is From Waster/Source Boundary   Distance Well Relative to Waster/Source	Piezometer					10.00
Distance Well Is From WesterSource Boundary   Coation of Well Relative to Well Replacement   Stearns Drilling, Inc.		Section Location of Was	te/Source			
Differential Source Area   It.   Downgradient   Soldgradient   S	i .	<del></del>			<u> </u>	
Potential Source Area	Distance Well Is From Waste/Source Boundary	1				Stearns Drilling, Inc.
Protective pipe, top elevation   ft. MSL    Well casing top elevation   ft. MSL    Land surface elevation   ft. MSL    Surface Seal, bottom   ft. MSL    USCS classification of soil near screen:    GP   GM   GC   GW   SW   SP    Bedrock   Sieve analysis attached?   Yes   No    Drilling method used:   Hollow Stem Auger    Drilling fluid used:   Water   Air    Drilling fluid used:   Water    Annular space seal:   Concrete from 1' bgs to surface    Orther    Annular space seal:   Concrete from 1' bgs to surface    Orther    Annular space seal:   Concrete from 1' bgs to surface    Orther    Annular space seal:   Concrete from 1' bgs to surface    Orther    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Orther    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Orther    Annular space seal:    Orther    Annular space seal:    Orther    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Orther    Annular space seal:    Drilling fluid used:   Water    Annular space seal:    Orther    Annular space seal:    Orther    Orther    Annular space seal:    Orther    Annular space seal:    Orther    Orther    Annular space seal:    Orther    Annular space seal:    Orther    Orther    Orther    Annular space seal:    Orther    Orther    Orther    Orther    Annular space seal:    Orther    Orther    Orther    Orthe			_			
Well casing top elevation	Potential Source Area ft.	☐ Downgradient	L	_ Not Knd	own	
Land surface devasion	Protective pipe, top elevation ft. MS	Ĺ		Ca	p and lo	ck? Yes X No
Land surface devasion	<del></del>					_
Land surface elevation	Well casing top elevationft. MS	L[	$\Box \setminus $			· · · · · · · · · · · · · · · · · · ·
Surface Seal, bottom ft. MSL or 0.1 ft.    USCS classification of soil near screen: GP GM GC GW SW SP SP No    Bedrock						
Surface Seal, bottom ft. MSL or 0.1 ft.   Additional protection?   Yes   No	Land surface elevation	L \			•	
USCS classification of soil near screen:   GP	Conference Control between the MCI and C. 4.	ا المحبير ﴿ م		Ma	aterial:	****
USCS classification of soil near screen:  CP GN GN GC GW SW SW SP Bedrock   Sieve analysis attached?   Yes No   Drilling method used:   Rotary   Geoprobe	Surface Seal, bottomft. MSL orft.	—" <u>\</u> \\\\\\\\		` •	ditional	
GR GC GW SW SP SM SC ML Bentonite Concrete Concr	USCS classification of soil near screen.					
SM SC ML MH CL CH Surface seal: Surface seal: Concrete [Material between well casing and protective pipe: Material between well casing and protect				1	,00,00	
Sieve analysis attached?   Yes   No   No   Rotary	SM C SC MLC MHC CLC			Su	rface se	al: Bentonite 🗆
Sieve analysis attached?   Yes   No   No   Material between well casing and protective pipe:						
Bentonite				. Co	oncrete fi	
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Sieve analysis attached?	No 🔅		Ma	aterial be	tween well casing and protective pipe:
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	· ·					
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup						Annular space seal
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	_			_		
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Geoprobe Other		<b>8</b>	An		
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Delline fluid cond. Mater 53 Air	📓		_		2.5 bags quick-grout to 8 gallons water
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup		님 . 🖺				
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Drining Mud	, ку 📔 🕍 👹				
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Drilling additives used?	i No 📓		Ho		·
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	i siming additions about.					
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Describe					
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup		<b>8</b>		Ве	ntonite s	eal: Bentonite granules 🗶
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Source of water:				] 1/4 m.	
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Municipal water into truck poly tank					Other
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup				, Fir	ne sand i	material: Manufacturer, product name & mesh size
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup		<u> </u>		Vo	lumo ad	ded out
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Bentonite seal, top to MSE or	2············ 🔪 🙀				· · · · · · · · · · · · · · · · · · ·
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Screen in Well casing Flush threaded PVC schedule 40 \texts{\textsup} \textsup	Fine sand, too ft. MSL or	ft.s				
Filter pack, top ft. MSL or 17 - 10.3 ft.  Screen joint, top ft. MSL or 12 ft.  Well casing: Flush threaded PVC schedule 40 Flush threaded PVC schedule 80 Cother C	1 110 50.10, 100		8			
Screen joint, top  ft. MSL or 12  ft.  Well bottom  ft. MSL or 17  ft.  Screen material:  Screen material:  Screen type:  Factory cut \( \)  Continuous slot \( \)  Continuous slot \( \)  Manufacturer  Slot size:  Slot size:  Slot size:  Other \( \)  Borehole, bottom  ft. MSL or 17  ft.  Slotted length:  Slotted length:  Slotted length:  Slotted length:  Backfill material (below filter pack):  None \( \)  Other \( \)  Other \( \)  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature  Firm	Filter pack, top ft. MSL or 17 -	10.3 ft.				
Well bottom ft. MSL or 17 ft. Screen material: PVC  Factory cut X  Continuous slot Continuous slot Manufacturer  Borehole, bottom ft. MSL or 17 ft. Slot size: 0.1 in. Slotted length: 5 feet ft. Backfill material (below filter pack): None X  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	***************************************		<b>100</b>			Flush threaded PVC schedule 80
Well bottom ft. MSL or 17 ft.  Filter pack, bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature  Sicreen type: Factory cut \( \)  Manufacturer \( \)  Soreen type: Factory cut \( \)  Manufacturer \( \)  Slot size: 0.1 in.  Slotted length: 5 feet ft.  Backfill material (below filter pack): None \( \)  Other \( \)  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature	Screen joint, top ft. MSL or 12	ft				Other 🗀
Filter pack, bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature  Continuous slot  Manufacturer Slot size: 0.1 in. Slotted length: 5 feet ft. Backfill material (below filter pack): None  Other   I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature		7	間	Sc	reen ma	
Filter pack, bottom ft. MSL or 17 ft.  Borehole, bottom ft. MSL or 17 ft.  Borehole, diameter in.  O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	Well bottom ft. MSL or 17	ft. \		Sc	reen typ	
Borehole, bottom ft. MSL or 17 ft. Slot size: 0.1 in.  Borehole, diameter in.  O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm			<b>=</b> :1			
Borehole, bottom ft. MSL or 17 ft. Slot size: 0.1 in. Slotted length: 5 feet ft. Backfill material (below filter pack): None \( \text{None} \) Other \( \text{Other} \)  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature   Firm	Filter pack, bottomtt. MSL or17		<b>,</b>	<del></del>		
Borehole, diameter in in	Davidada battara 4 MCI aa 47					
Borehole, diameter in.  O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	Borenole, bottom II. MSL of 1/	<sup>II.</sup>				
O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	Borehole diameter in					·
O.D. well casing in.  I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	Bordhole, diameter III.			· ba	CKIII III a	
I.D. well casing in.  I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature Firm	O.D. well casing in.					
I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature  Firm						
I hereby certify that the information on this form is true and correct to the best of my knowlege.  Signature  Firm	I.D. well casing in.					
Signature Firm	***************************************	and correct to the best of	f my knowless			
			n my knowlege			
			WH Americas	s, Inc.		



				JOB NO. 2	101374
Facility/Project Name	Local Grid Location of	of Well	☐ E.	Well Name	
Wayne Reclamation and Recycling Site	ft.	=	ft. 🗎 w.	<b>SVE 56</b>	
Type of Well soil vapor extraction x	Grid Origin Location			Date Well Installed	
Water Table Observation Well	Lat	Long.	Or	-	
Piezometer	St. Plane	ft. N,	ft. E.		15
	Section Location of V	vaste/Source		Well Installed By: (Person's Name Jerry and Ryan	e and Firm)
Distance Well Is From Waste/Source Boundary	Location of Well Rela	tive to Waste/		Steams Drilling, In-	C.
,	☐ Upgradien		Sidegradient		
Potential Source Area ft.	☐ Downgrad	ient	☐ Not Known		
Protective pipe, top elevation ft. MS	Ĺ		Cap and k	ock?	Yes X No
Well casing top elevationft. MS	L			cover pipe: NONE	
Land surface elevation # AKS	1		Inside diar	neter:	— in
Land surface elevationft. MS	_		Length: Material:		Steel
Surface Seal, bottomft. MSL or0 - 1	ft		}		Other 🔲
USOS designations of self-			<b>X</b>	_	Yes No
USCS classification of soil near screen:  GP GM GC GW SW G	I SP I		If yes, d	escride:	
SM SC ML MH CL	СН		Surface se	al:	Bentonite [
Bedrock 🗀				ann Alban In andras	Concrete
Sieve analysis attached?	7 No		\	rom 1' bgs to surface etween well casing and protective p	Other
					Bentonite 🗀
Drilling method used: Rotary Hollow Stem Auger				Annula	ar space seal 🔲
6 & 1/4" augers Other			Annular sp	ace seal:	Other
	_			native materials & connected to	o SVE system
Drilling fluid used: Water Air Drilling Mud None				Lbs/gal mud weight Berlonite-	
Stilling Midd C	IX.			cu ft volume added for any of the	
Drilling additives used?	No No		How instal		Tremie 🔲
Describe	i			Tre	emie pumped 🔲 Gravity 🗶
	<del></del>		Bentonite		nite granules 🗶
Source of water:			/ 🔲 1/4 in	x 3/8 in. □ 1/2 in. Ben	tonite pellets
Municipal water into truck poly tank	<del></del> -		Fine sand	material: Manufacturer, product nai	Other me & mesh size
	PTH		//		
Bentonite seal, topft. MSL or6	- 3ft.		/ /	ided cu ft	ma P mach ciza
Fine sand, top ft. MSL or	ft.			material: Manufacturer, product na er Pack quartz sand	ine a mesii size
			Volume ac		
Filter pack, topft. MSL or	<u>-6</u> ft.		Well casin	g: Flush threaded PVC Flush threaded PVC	
Screen joint, top ft. MSL or 8	ft.		/	ridsh threaded 1 VO	Other
			Screen ma		
Well bottom ft. MSL or 18	<sup>n.</sup>		Screen typ		Factory cut 🗶
Filter pack, bottom ft. MSL or 18	ft		screen and	d riser = 4" diameter	Other
Borehole, bottom ft. MSL or 18	4		Manufactu Slot size:	0.1	in
Borehole, bottom ft. MSL or 18	"		Slotted ler		— 'n
Borehole, diameter in.		-		sterial (below filter pack):	None 🗶
O.D. well casingin.					Other 🗖
I.D. well casing in.					
I hereby certify that the information on this form is true	and correct to the be	st of my knowle	ege.		
Signature	Firm	A 4) A //   A :	inna lan		
Diane M. Krueger	l	MWH Amer	icas, inc.		



<u> </u>		<u>'</u>		JOB NO. 2101	374
Facility/Project Name	Local Grid Location of We		·— -	Well Name	
Wayne Declaration and Deputing Site	. =	N.	E. W.	SVE 57	
Wayne Reclamation and Recycling Site		S. ft.	<u> </u>	Date Well Installed	<del></del>
Type of Well soil vapor extraction X  Water Table Observation Well	Grid Origin Location	1			
	Lat.	Long.	or t: 5		
, Piezometer L	St. Plane	ft. N,	ft. E.	<del></del>	15:
	Section Location of Waste	/Source	=	Well Installed By: (Person's Name ar	nd Firm)
5			W.	, ,	
Distance Well Is From Waste/Source Boundary	Location of Well Relative			Stearns Drilling, Inc.	
Detected Course Assa	Upgradient	_	gradient	:	
Potential Source Area ft.	Downgradient	□ Not		=	
Protective pipe, top elevation ft. MS	L	<b>-</b>	Cap and lo	ck?	Yes X No
Well casing top elevation ft. MS	·	-, ks/	Destantiva	cover pipe: NONE	
Ti. MS	`   <b> </b>	+   `	Inside dian	• •	in.
Land surface elevationft. MS	L		Length:		ft.
<del></del> -		11	Material:		Steel
Surface Seal, bottomft. MSL or0 - 1	ft.\_ ~				Other 🔲
					Yes 😠 No
USCS classification of soil near screen:		14:::::::::::::::::::::::::::::::::::::	If yes, de	escribe:	
GP GM GC GW SW SW SM SM SC ML MH CL C			Surtace se	al	Postonite [7]
Bedrock	) ("L)		Surface se		Bentonite 🔲 Concrete 😠
Sources []			Concrete f	rom 1' bgs to surface	Other
Sieve analysis attached?	☑ No			tween well casing and protective pipe	
					Bentonite 🔲
Drilling method used:				Annular sp	pace seal
Hollow Stem Auger	<u> 본</u>		Annular sp		Other 🔲
6 & 1/4" augers Other			Annular sp	native materials & connected to S'	VF system
Drilling fluid used: Water ☐ Air				Lbs/gal mud weight Bentor	
Drilling Mud 🔲 None				% Bentonite Bentonite-cem	
				cu ft volume added for any of the abo	ve
Drilling additives used?	No No		How install		Tremie [
Danadha				Tremie	pumped
Describe	📓		Rentonite	seal: Rentonite	Gravity 🗶
Source of water:		/ <b>(3</b>	1/4 m	seal: Bentonite  x 3/8 in ☐ 1/2 in Bentoni	ite pellets
Municipal water into truck poly tank					Other 🔲
	NO □ NO □ NO □ NO □ NO □ NO □ NO □ NO □		Fine sand	material: Manufacturer, product name	& mesh size
ELEVATION DEI  Bentonite seal, top ft. MSL or 5	<u>PTH</u> (		Volume ad	ded cu ft	
bentonite sear, top it. MSL or	·-· <sup>11.</sup>			material: Manufacturer, product name	& mesh size
Fine sand, topft. MSL or	ft.		· · · · · · · · · · · · · · · · · · ·	er Pack quartz sand	, a 1110011 0120
				dedcu ft	
Filter pack, top ft. MSL or 7	- 5 ft.		Well casin	g: Flush threaded PVC sch	nedule 40 🗴
				Flush threaded PVC sch	
Screen joint, top ft. MSL or 7	ft.		0	DVO	Other [
Well bottom ft. MSL or 17	. 7		Screen ma		actory cut x
TVER BORIOTI	"	<b>3</b> 3	Screen typ		nuous slot
Filter pack, bottom ft. MSL or 17	ft \\	∄:]	screen and	riser = 4° diameter	Other 🗀
			Manufactu		
Borehole, bottom ft. MSL or 17	ft		Slot size:	0.1	in.
			Slotted len	=	ft.
Borehole, diameterin.		_	Backfill ma	iterial (below filter pack):	None 🗶
O.D. well casing in.					Other 🗀
O.D. well casing in.					
I.D. well casing in.					
I hereby certify that the information on this form is true	and correct to the best of	my knowlede			
Signature	Firm	,ogo.		<del></del>	
Diane M. Krueger		/H Americas, Inc.			



				JOB NO. 2101374
Facility/Project Name	Local Grid Location of Wel		□ E.	Well Name
Wayne Reclamation and Recycling Site		S. ft.		SVE 58
Type of Well soil vapor extraction x	Grid Origin Location			Date Well Installed
Water Table Observation Well	Lat	Long.	or	12/10/2002
Piezometer 🗌		ft. N,	ft. E.	
	Section Location of Waste	/Source		Well Installed By: (Person's Name and Firm)
Distance Well to From Weste/Source Boundary	Location of Well Relative to	- Manta/Sauras	W.	
Distance Well Is From Waste/Source Boundary	Upgradient	o waste/source ☐ Side	oradient	Stearns Drilling, Inc.
Potential Source Area ft.	Downgradient	_	Known	
Protective pipe, top elevation ft. MS			Cap and lo	ck? Yes x No
Well casing top elevation ft. MS		7	Protective	cover pipe: NONE
The moderning top crovation	`   <del> </del>	<del> </del>	Inside dian	• •
Land surface elevationft. MS	L		Length:	fi.
	البہر		Material:	Steel
Surface Seal, bottomft. MSL or0 - 1	—" <u> </u>		Additional	Other Drotection? Yes X No
USCS classification of soil near screen:			If yes, de	
GP ☐ GM ☐ GC ☐ GW ☐ SW ☐			·	
SM SC ML MH CL Bedrock	] CH [		Surface se	al: Bentonite Concrete X
Bedrock [		- <u> </u>	Concrete for	rom 1' bgs to surface Other
Sieve analysis attached?	☑ No			tween well casing and protective pipe:
Dalling maked and				Bentonite
Drilling method used: Rotary Hollow Stem Auger				Annular space seal ☐ Other ☐
6 & 1/4" augers Other		<b></b>	Annular sp	
Drilling fluid used: Water ☐ Air				native materials & connected to SVE system  Lbs/gal mud weight
Drilling Mud None	<b> </b>			% Bentonite Bentonite-cement grout
				cu ft volume added for any of the above
Drilling additives used?	J No		How install	
Describe				Tremie pumped Gravity 🗓
			Bentonite s	seal: Bentonite granules x
Source of water:			1/4 in.	
Municipal water into truck poly tank	I 🖁		Fine sand	material: Manufacturer, product name & mesh size
	No			<del> </del>
Bentonite seal, topft. MSL or6	· 3ft.			ded cu ft material: Manufacturer, product name & mesh size
Fine sand, topft. MSL or	ft.		•	er Pack quartz sand
	<b>\</b> 18		Volume ad	
Filter pack, top ft. MSL or 8	<u>6</u> ft.		Well casing	
Screen joint, top ft. MSL or 8	ft.			Flush threaded PVC schedule 80 ☐ Other ☐
	777		Screen ma	
Well bottom tt. MSL or 18	"		Screen typ	e: Factory cut 🗓 Continuous slot 🗍
Filter pack, bottomft. MSL or	ft.			riser = 4" diameter Other
Borehole, bottom ft. MSL or 18	ftft.		Manufactui Slot size:	0.1 in.
			Slotted len	· ———
Borehole, diameterin.			oackilli ma	terial (below filter pack): None X Other
O.D. well casingin.				
I.D. well casing in.				
I hereby certify that the information on this form is true	and correct to the best of r	ny knowlege.		
Signature Diene M. Krusser	Firm	L American Inc		
Diane M. Krueger	l MW	H Americas, Inc.		

# Appendix E



#### APPENDIX E

# SUMMARY OF AIR DISPERSION MODELING AND CUMULATIVE CANCER RISK CALCULATIONS

# Wayne Reclamation & Recycling Columbia City, Indiana

The following summarizes the air modeling conducted by MWH Americas, Inc. for the Wayne Reclamation & Recycling (WRR) site in Columbia City, Indiana to assess the maximum annual average ground-level concentration (GLC) that could occur at any point outside the perimeter of the WRR site. Descriptions of the model, modeling procedures, and the results are provided below.

## AIR DISPERSION MODELING PROCEDURES

The modeling was performed by utilizing the United States Environmental Protection Agency (U.S. EPA) model Industrial Source Complex – Long-Term (ISC-LT) to evaluate the ambient air impact of emissions from the site. Dispersion modeling was conducted on both the air treatment system influent and effluent in order to compare the risks associated with both treated and untreated air.

### Meteorological Data

Meteorological data from 1985 was entered into the model for the Columbia City, Indiana region. Model output is highly sensitive to such data, as changes in atmospheric conditions will directly affect the ability of a discharged pollutant to disperse in the surrounding air. Meteorological data such as wind speed, wind direction, urban and rural mixing heights, Pasquill Stability Classifications (rated A to G, with G being the most stable), and ambient air temperature were converted into a binary data package. The package was then loaded into the ISC-LT model. The model then evaluated these conditions with the remaining model input parameters to identify which combinations of these conditions would result in maximum GLC of pollutants.

### **Emissions Source Data**

The following data represents the emissions parameters at the WRR site that were entered into the model:

Stack Height 9.1 meters
Stack Diameter 0.4064 meters

Stack Base Elevation 6.1 meters

Exhaust Temperature 73° C

Gas Exit Velocity 13.08 meters per second

Volumetric Flow Rate 1.7 cubic meters per second

Influent/Effluent Concentrations Sampling events (see Table 14 of Progress Report 3)

Terrain Flat

Dispersion Coefficients Rural
Final Plume Rise On

Stack-tip Downwash On

Receptor Height 0 meters

## **Modeling Procedure**

A grid was established to describe the relationship of the emission source with its surroundings, including the location of the site boundaries and any potential receptors. A cartesian grid was established around the site to determine GLC locations.

#### **HUMAN HEALTH RISK ASSESSMENT**

The maximum concentrations determined by the air modeling study were multiplied by unit risk factors to obtain the excess carcinogenic risk posed by the emissions through the inhalation route. The unit risk factors used in this study were developed from toxicity values included in U.S. EPA's Integrated Risk Information System (IRIS), U.S. EPA's "Health Assessment Summary Tables" (HEAST, Annual FY-1995), and information provided by the U.S. EPA Environmental Criteria Assessment Office. The unit risk factors assume a chronic exposure to the carcinogenic chemicals for 24 hours a day, 365 days a year, for 70 years. The unit risk factors for the constituents of concern are:

Vinyl chloride - 7.80E-05 1,1-Dichloroethane - 1.63E-08 Trichloroethene - 2.00E-06 Tetrachloroethene - 5.90E-06 The excess cancer risk to the maximally-exposed individual can be calculated by multiplying the unit risk factor by the ambient concentration of the chemical in question. In a residential zone, the maximally-exposed individual is assumed to be continuously exposed to the chemical for 70 years.

The maximum individual excess cancer risk (MICR) to the maximally-exposed individual due to air toxic emissions from the WRR site was calculated by multiplying the appropriate risk factor (URF) by the maximum annual GLC at the maximally-exposed individual:

A summary of these calculations using concentrations generated from the model output is provided in Table 14 of Progress Report 3. An example model input/output is attached.

\_\_\_\_\_

On June 24, 1999, air treatment was discontinued; however, monthly air sampling continues to be conducted on the effluent air stream as a means of monitoring potential risk levels associated with the untreated air stream. Effluent air sampling conducted since discontinuation of air treatment indicates the 1x10<sup>-6</sup> action level has not been exceeded, with one minor exception of February 2002. This was due to a slight increase in the vinyl chloride concentration noted in the system effluent air stream during that month's sampling.

\Usdet1s01\Jobs\jobs\3868-WayneRR\01-O&MActivities\6-Reports\ProgressReports\progrpt15-July-Dec2002\AppendixE-airriskcalcs.doc

```
CO STARTING
CO TITLEONE Fort Wayne Reclamation Site, 30 ft stack
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CO POLLUTID OTHER
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 RE FINISHED
 ME STARTING
ME INPUTFIL METFIL.STR FREE
 ME ANEMHGHT 10.00 METERS
 ME SURFDATA 14827 1985
                               SURFNAME
 ME UAIRDATA 13840 1985
                               UAIRNAME
 ME STARDATA ANNUAL
ME AVESPEED 1.54 3.09 3.95 5.14 8.23 10.80 ME AVETEMPS ANNUAL 280 280 280 280 280 280
ME AVEMIXHT ANNUAL A 440 440 440 440 440 ME AVEMIXHT ANNUAL B 440 440 440 440 440 440
 ME AVEMIXHT ANNUAL C 440 440 440 440 440
 ME AVEMIXHT ANNUAL D 440 440 440 440 440
 ME AVEMIXHT ANNUAL E 440 440 440 440 440
 ME AVEMIXHT ANNUAL F 440 440 440 440 440
 ME FINISHED
 OU STARTING
 OU RECTABLE SRCGRP
 OU FINISHED
 *** SETUP Finishes Successfully ***
```

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```
*** Fort Wayne Reclamation Site, 30 ft stack
 *** ISCLT3 - VERSION 95250 ***
                                                                  DFAULT
                                         RURAL FLAT
 *** MODELING OPTIONS USED: CONC
                                                           MODEL SETUP OPTIONS SUMMARY
**Model Is Setup For Calculation of Average CONCentration Values.
**Model Does NOT Use GRIDDED TERRAIN Data for Depletion Calculations
**Model Uses NO plume DEPLETION.
**Model Uses RURAL Dispersion.
**Model Uses Regulatory DEFAULT Options:
             1. Final Plume Rise.
             2. Stack-tip Downwash.

    Buoyancy-induced Dispersion.
    Default Wind Profile Exponents.

    Default Vertical Potential Temperature Gradients.
    "Upper Bound" Values For Supersquat Buildings.

             7. No Exponential Decay for RURAL Mode
**Model Assumes Receptors on FLAT Terrain.
**Model Assumes No FLAGPOLE Receptor Heights.
                         1 STAR Average(s) for the Following Months:
                                                                             0
                                                                                 O
                                                                                    n
**Model Calculates
                                                       Seasons/Quarters:
                                                              and Annual:
                                                                             1
**Data File Includes 1 STAR Summaries for the Following Months:
                                                                             n
                                                                                 n
                                                                                    n
                                                       Seasons/Quarters:
                                                                                 0
                                                                                     0
                                                                                        0
                                                              and Annual:
                                                                                386 Recepto
                                                 1.Source Group(s); and
 **This Run Includes:
                            1 Source(s);
 **The Model Assumes A Pollutant Type of:
                                                 OTHER
 **Model Set To Continue RUNning After the Setup Testing.
 **Output Options Selected:
           Model Outputs Tables of Long Term Values by Receptor (RECTABLE Keyword
                                                        Decay Coef. =
                    Anem. Hgt. (m) =
                                            10.00;
 **Misc. Inputs:
                                                                                            \mathbf{E}
                     Emission Units = (GRAMS/SEC)
```

Output Units = (MICROGRAMS/CUBIC-METER)

\*\*Input Runstream File: INPUT.FIL
\*\*Error Message File: ERRORS.OUT

\*\*Output Pri

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

\*\*\* POINT SOURCE DATA \*\*\*

DFAULT

SOURCE ID		EMISSION RATE (USER UNITS)	X (METERS)	Y (METERS)	BASE ELEV. (METERS)	STACK HEIGHT (METERS)	STACK TEMP. (DEG.K)	E
1	0	.70000E-02	.0	.0		9.14	293.15	_

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* SOURCE IDS DEFINING SOURCE GROUPS

GROUP ID SOURCE IDS

ALL 1

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

				*** DISCRE (X-COORD	TE CARTESIAN RECEPT O, Y-COORD, ZELEV, T (METERS)	rors ** ZFLAG)
	-241.0. -239.0, -169.0, -134.0, -134.0, -134.0, -10	116.0, -45.0, -86.0, -86.0, -86.0, -86.0, -99.0, -111.0, -99.0, -111.0, -116.0, -1	000000000000000000000000000000000000000	000000000000000000000000000000000000000	( -239.0,	-85. -75. 114. 110. 181. 181. 181. -119. 231. 231. -631. 231. -6400. -40
(	-700.0,	100.0,	.0,	.0);	( -700.0,	20 <b>O</b>

ı

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

•			*** DISCRET (X-COORD,	E CARTESIAN RECE Y-COORD, ZELEV, (METERS)	PTORS ** ZFLAG)
-500.0, -500.0, -500.0, -500.0, -500.0, -500.0, -500.0, -500.0, -500.0, -500.0, -400.0, -400.0, -400.0, -400.0, -400.0, -400.0, -400.0, -300.0, -300.0, -300.0, -300.0, -300.0, -300.0, -300.0, -300.0,			;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	( -700.0,	400. 800. 800. -800. -400. -200. 400. -200. 400. -200. 400. -300. -
( -200.0,	-800.0,	.0,	.0);	( -200.0,	-70 <b>O</b>

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

200.0.

DFAULT

\*\*\* DISCRETE CARTESIAN RECEPT (X-COORD, Y-COORD, ZELEV, Z) -200.0, -600.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -200.0, -800.0, -100.0, -400.0, -100.0, -100.0, -200.0, -100.0, -200.0, -100.0, -200.0, -100.0, -200.0, -100.0, -200.0 (METERS) .0, .0); -200.0, .ŏį; -200.0, .0j; -200.0, .0, -200.0, .0); .0, .0); -200.0, .0); .0); .0); .0); -200.0, .0); -200.0, -200.0, -200.0, -100.0, -100.0, -100.0, 9 -71 .0, -5( -30 .0); -10 .0, .0); -100.0, 10( .0, .0); -100.0, 300 .0); -100.0, 500 .0); -100.0, 700 -100.0, .0, .0); 900 .0, .0); -700. .0, .0, .0); .0, -500 -.0, -300 -.0); .0, .0, .0); .0, -100--100 -100 -300 .0, .0); .0, .0, .0); .0, .0, .0, .0); .0, .0); 500 -.0, .0, .0); .0, 700 -.0, .0): 900 -.0, 100.0, .0, .0); -700 -.0, .0); 100.0, -500 -100.0, .0, .0); -300 -.0, .0); 100.0, -100 -.0); 100.0, .0, 100 -.0, 300 -100.0, .0, .0); 100.0, 500 -.0, 700 -.0); 100.0, 100.0, ٠0, .0); 900 -.0, .0); 200.0, -700 --500 --300 -.0, .0); 200.0, .0, .0); 200.0, .0, .0); 200.0, -100 . 100. 200.0, 400.0, 600.0, 800.0, .0, .0); 200.0, 200.0, .0, .0); 200.0, 200.0, .0, .0); 200.0, 500 . 200.0, 200.0, .0, .0); 700 .

.0,

.0);

900 .

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

**DFAULT** 

		,	E CARTESIAN RECEI Y-COORD, ZELEV, (METERS)	
( 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 400.0, 400.0, 400.0, 400.0, 400.0, 500.0, 500.0, 500.0, 500.0, 500.0, 600.0, 600.0, 600.0, 600.0, 600.0, 700.0,	-800.0, -600.0, -400.0, -200.0, 400.0, 600.0, -800.0, -600.0, -400.0, -200.0, 400.0, -800.0, -	0,0000000000000000000000000000000000000	 ( 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 300.0, 400.0, 400.0, 400.0, 400.0, 400.0, 400.0, 500.0, 500.0, 500.0, 500.0, 600.0, 600.0, 600.0, 600.0, 600.0, 600.0, 700.0,	900 - 700 - 500 - 100 - 700 - 700 - 700 - 100 - 100 - 100 - 100 - 100 - 200 - 400 - 200 - 200 - 400 - 200 - 200 - 400 - 200 -

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

				*** DISCRET (X-COORD)		D, ZELEV,	
(	700.0,	900.0,	.0,	.0);	(	800.0,	-600.
(	800.0,	-500.0,	.0,	.0);	(	800.0,	-400.
ì	800.0,	-300.0,	.0,	.0);	(	800.0,	-200.
ì	800.0,	-100.0,	.0,	.0);	į	800.0,	•
ì	800.0,	100.0,	.0,	.0);	į	800.0,	200.
ì	800.0,	300.0,	.0,	.0);	i	800.0,	400.
ì	800.0,	500.0,	.0,	.0);	i	800.0,	600.
ì	800.0,	700.0,	.0,	.0);	i	800.0,	800.
ì	900.0,	-300.0,	.0,	.0);	ì	900.0,	-200.
ì	900.0	-100.0,	.0,	.0);	ì	900.0,	
- }	900.0,	100.0,	.0,	.0);	ì	900.0	200.
}	900.0.	300.0,	.0,	.0);	ì	900.0	400.
(	900.0,	500.0,	.0,	.0);	ì	900.0,	600.

\*\*\* Fort Wayne Reclamation Site, 30 ft stack \*\*\* ISCLT3 - VERSION 95250 \*\*\*

RURAL FLAT \*\*\* MODELING OPTIONS USED: CONC

DFAULT

\* SOURCE-RECEPTOR COMBINATIONS FOR WHICH CALCULATIONS MAY LESS THAN 1.0 METER OR 3\*ZLB IN DISTANCE, OR WITHIN O

--- RECEPTOR LOCATION - - XR (METERS) YR (METERS) SOURCE ID .0 .0

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

***	AVERAGE	SPEED	FOR	EACH	WIND	SPEED	CA
			( )	AETERS	S/SEC	١	

1.54, 3.09, 3.95, 5.14, 8.2

## \*\*\* WIND PROFILE EXPONENTS \*\*

STABILITY		WIND	SPEED CATEGORY	
CATEGORY	1	2	3	4
A	.70000E-01	.70000E-01	.70000E-01	.700 <b>O</b>
В	.70000E-01	.70000E-01	.70000E-01	.7000
С	.10000E+00	.10000E+00	.10000E+00	.1000
D	.15000E+00	.15000E+00	.15000E+00	.1500
E	.35000E+00	.35000E+00	.35000E+00	.3500
F	.55000E+00	.55000E+00	.55000E+00	.5500

# \*\*\* VERTICAL POTENTIAL TEMPERATURE GRA (DEGREES KELVIN PER METER)

STABILITY		WIND	SPEED CATEGORY	
CATEGORY	1	2	3	4
A	.00000E+00	.00000E+00	.00000E+00	.0000
В	.00000E+00	.00000E+00	.00000E+00	.0000
С	.00000E+00	.00000E+00	.00000E+00	.0000
D	.00000E+00	.00000E+00	.00000E+00	.0000
E	.20000E-01	.20000E-01	.20000E-01	.2000
F	.35000E-01	.35000E-01	.35000E-01	.3500

## \*\*\* AVERAGE AMBIENT AIR TEMPERATURE (KEI

	STABILITY CATEGORY A	STABILITY CATEGORY B	STABILITY CATEGORY C	STABILITY CATEGORY D	c
ANNUAL	280.0000	280.0000	280.0000	280.0000	

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* AVERAGE MIXING LAYER HEIGHT (METERS) \*\*

•			WIND SPEED CATEGORY 1	WIND SPEED CATEGORY 2	ANNUAL WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	
STABILITY	CATEGORY	Α	440.0000	440.0000	440.0000	440.0000	
STABILITY	CATEGORY	В	440.0000	440.0000	440.0000	440.0000	
STABILITY	CATEGORY	С	440.0000	440.0000	440.0000	440.0000	
STABILITY	CATEGORY	D	440.0000	440.0000	440.0000	440.0000	•
STABILITY	CATEGORY	$\mathbf{E}$	440.0000	440.0000	440.0000	440.0000	
STABILITY	CATEGORY	F	440.0000	440.0000	440.0000	440.0000	

\*\*\* ISCLT3 - VERSION 95250 \*\*\* \*\*\* Fort Wayne Reclamation Site, 30 ft stack

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY \*

FILE: METFIL.STR

FORMAT: FREE

SURFACE STATION NO.: 14827 NAME: SURFNAME

UPPER AIR STATION NO.

YEAR: 1985 NAME YEAR

## ANNUAL: STABILITY CATEGORY A

DIRECTION	WIND SPEED CATEGORY 1 ( 1.540 M/S)	WIND SPEED CATEGORY 2 ( 3.090 M/S)	WIND SPEED CATEGORY 3 ( 3.950 M/S)	WIND SPEED CATEGORY 4 ( 5.140 M/S)	WIND SPEED CATEGORY 5 ( 8.230 M/S)	W C (1
(DEGREES)	.00000000	.00000000	.00000000	.00000000	.00000000	_
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	
45,000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292,500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	.00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	
337.300		.0000000	.0000000			

### ANNUAL: STABILITY CATEGORY B

DIRECTION	WIND SPEED CATEGORY 1 ( 1.540 M/S)	WIND SPEED CATEGORY 2 ( 3.090 M/S)	WIND SPEED CATEGORY 3 ( 3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 ( 8.230 M/S)	(
(DEGREES)		~~~~~~~~~				
.000	.00000000	.00000000	.00000000	.00000000	.00000000	
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	
45.000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292.500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	.00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	

\*\*\* ISCLT3 - VERSION 95250 \*\*\* \*\*\* Fort Wayne Reclamation Site, 30 ft stack

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY \*

'FILE: METFIL.STR

FORMAT: FREE

SURFACE STATION NO.: 14827
NAME: SURFNAME

UPPER AIR STATION NO. NAME

YEAR: 1985

YEAR

ANNUAL:	STABILITY	CATEGORY	С

DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 ( 1.540 M/S)	WIND SPEED CATEGORY 2 ( 3.090 M/S)	WIND SPEED CATEGORY 3 ( 3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1
.000	.00000000	.00000000	.00000000	.00000000	.00000000	
22.500	.00000000	.00000000	.00000000	.00000000	.00000000	1
45.000	.00000000	.00000000	.00000000	.00000000	.00000000	
67.500	.00000000	.00000000	.00000000	.00000000	.00000000	. '
90.000	.00000000	.00000000	.00000000	.00000000	.00000000	•
112.500	.00000000	.00000000	.00000000	.00000000	.00000000	
135.000	.00000000	.00000000	.00000000	.00000000	.00000000	
157.500	.00000000	.00000000	.00000000	.00000000	.00000000	
180.000	.00000000	.00000000	.00000000	.00000000	.00000000	
202.500	.00000000	.00000000	.00000000	.00000000	.00000000	
225.000	.00000000	.00000000	.00000000	.00000000	.00000000	
247.500	.00000000	.00000000	.00000000	.00000000	.00000000	
270.000	.00000000	.00000000	.00000000	.00000000	.00000000	
292.500	.00000000	.00000000	.00000000	.00000000	.00000000	
315.000	.00000000	:00000000	.00000000	.00000000	.00000000	
337.500	.00000000	.00000000	.00000000	.00000000	.00000000	

### ANNUAL: STABILITY CATEGORY D

I	WIND SPEED CATEGORY 1	WIND SPEED CATEGORY .2	WIND SPEED CATEGORY 3	WIND SPEED CATEGORY 4	WIND SPEED CATEGORY 5	
DIRECTION (DEGREES)	( 1.540 M/S)	( 3.090 M/S)	( 3.950 M/S)	( 5.140 M/S)	( 8.230 M/S)	(
.000	.00067300	.00807100	.01059300	.00588500	.00000000	
22.500	.00056000	.00739800	.00420300	.00218600	.00000000	
45.000	.00056000	√∵.00504400	.00689400	.00353100	.00000000	
67.500	.00056000	.00739800	.01193800	.00655700	.00067300	
90.000	.00201800	.01412300	.02135300	.01227400	.00100900	
112.500	.00168100	.00739800	.00723000	.00252200	.00000000	
135.000	.00302600	.00874300	.00588500	.00151300	.00000000	
157.500	.00302600	.01008800	.00674200	.00151300	.00000000	
180.000	.00403500	.01345100	.01462800	.00689400	.00050400	
202.500	.00269000	.01244200	.01368600	.00790200	.00084100	
225.000	.00336300	.01513200	.02377400	.01731800	.00302600	
247.500	.00201800	.01042400	.01704900	.01395500	.00336300	
270.000	.00168100	.01412300	.02209300	.02471600	.00605300	
292.500	.00067300	.00773400	.01025600	.00790200	.00067300	
315.000	.00067300	.00739800	.01025600	.00823900	.00067300	
337.500	.00067300	.00739800	.00958400	.00622100	.00033600	

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* FREQUENCY OF OCCURRENCE OF WIND SPEED, DIRECTION AND STABILITY \*

FILE: METFIL.STR

FORMAT: FREE

SURFACE STATION NO.: 14827

UPPER AIR STATION NO.

NAME: SURFNAME YEAR: 1985

NAME YEAR

.00015200

ANNUAL: STABILITY CATEGORY E

		•			_	
DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 ( 1.540 M/S)	WIND SPEED CATEGORY 2 ( 3.090 M/S)	WIND SPEED CATEGORY 3 ( 3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	W C (1
.000 22.500 45.000 67.500 90.000 112.500	.00029200 .00024300 .00024300 .00024300 .00087600 .00073000	.00350200 .00321000 .00218900 .00321000 .00612900 .00321000	.00459700 .00182400 .00299200 .00518000 .00926700 .00313700	.00255400 .00094900 .00153200 .00284600 .00532600 .00109400	.0000000 .0000000 .0000000 .00029200 .00043800 .00000000	
157.500 180.000 202.500 225.000 247.500 270.000 292.500 315.000	.00131300 .00131300 .00175100 .00116700 .00145900 .00087600 .00073000 .00029200	.00437800 .00437800 .005339900 .00656700 .00452400 .00612900 .00335600	.00292600 .00292600 .00634800 .00593900 .01031700 .00739900 .00958800 .00445100	.00065700 .00065700 .00299200 .00342900 .00751500 .00605600 .01072600 .00342900	.0000000 .0000000 .00021900 .00036500 .00131300 .00145900 .00262700 .00029200	
337.500	.00029200	.00321000	.00415900	.00270000 LITY CATEGORY	.00014600	
DIRECTION (DEGREES)	WIND SPEED CATEGORY 1 ( 1.540 M/S)	WIND SPEED CATEGORY 2 ( 3.090 M/S)	WIND SPEED CATEGORY 3 (3.950 M/S)	WIND SPEED CATEGORY 4 (5.140 M/S)	WIND SPEED CATEGORY 5 (8.230 M/S)	WC1-
.000 22.500 45.000 67.500 90.000 112.500 135.000 157.500 180.000 202.500 225.000 247.500	.00030500 .00025400 .00025400 .00025400 .00091400 .00076100 .00137000 .00137000 .00182700 .00121800 .00152300	.00365500 .00335000 .00228400 .00335000 .00639600 .00335000 .00395900 .00456800 .00609100 .00563400 .00685200	.00479700 .00190300 .00312200 .00540600 .00966900 .00327400 .00266500 .00305300 .00662400 .00619800 .01076600	.00266500 .00099000 .00159900 .00296900 .00555800 .00114200 .00068500 .00068500 .00312200 .00357800 .00784200	.0000000 .0000000 .0000000 .00030500 .00045700 .00000000 .00000000 .00022800 .00038100 .00137000 .00152300	
270.000 292.500 315.000	.00076100 .00030500 .00030500	.00639600 .00350200 .00335000	.01000400 .00464400 .00464400	.01119200 .00357800 .00373100	.00274100	

SUM OF FREQUENCIES, FTOTAL = .99381

.00434000

.00281700

.00335000

315.000 337.500

.00030500

\*\*\* MODELING ORTIONS USED: CONC RURAL FLAT

DFAULT

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1

\*\*\* DISCRETE CARTESIAN RECEPTOR POI,

IN (MICROGRAMS/CUBIC

X-COORD (M)	UBIC
-239.00	(M)
-239.00	00 -
-239.00	
-204.00	
-169.00	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
-89.00	
-69.00	
-45.00	
-1.00	
43.00       -103.00       .003187       59         70.00       -111.00       .005509       97         102.00       183.00       .020349       102         123.00       -133.00       .011355       142         149.00       -146.00       .012918       182         184.00       -145.00       .013191       202         209.00       -116.00       .013247       215         221.00       -31.00       .025667       222         227.00       7.00       .032258       223         242.00       91.00       .023422       251         260.00       181.00       .025157       262         264.00       232.00       .025917       -900         -900.00       -700.00       .002927       -900         -900.00       -500.00       .003943       -900         -900.00       -500.00       .008457       -900         -900.00       -100.00       .008457       -900         -900.00       300.00       .004771       -900         -900.00       500.00       .003555       -900         -900.00       -0000       .003555       -900         -90	
70.00       -111.00       .005509       97         102.00       183.00       .020349       102         123.00       -133.00       .011355       142         149.00       -146.00       .012918       182         184.00       -145.00       .013191       202         209.00       -116.00       .013247       215         221.00       -31.00       .025667       222         227.00       7.00       .032258       223         242.00       91.00       .023422       251         260.00       181.00       .025157       262         264.00       232.00       .025917       -900         -900.00       -700.00       .002927       -900         -900.00       -500.00       .003943       -900         -900.00       -500.00       .003943       -900         -900.00       -500.00       .008457       -900         -900.00       -100.00       .008457       -900         -900.00       500.00       .003555       -900         -900.00       700.00       .003555       -900         -900.00       700.00       .003555       -900 <t< td=""><td></td></t<>	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
123.00       -133.00       .011355       142         149.00       -146.00       .012918       182         184.00       -145.00       .013191       202         209.00       -116.00       .013247       215         221.00       -31.00       .025667       222         227.00       7.00       .032258       223         242.00       91.00       .023422       251         260.00       181.00       .025157       262         264.00       232.00       .025917       -900         -900.00       -700.00       .002927       -900         -900.00       -500.00       .003943       -900         -900.00       -300.00       .005665       -900         -900.00       -300.00       .008129       -900         -900.00       300.00       .004771       -900         -900.00       500.00       .003555       -900         -900.00       700.00       .00328       -800         -800.00       -700.00       .004771       -900         -800.00       -700.00       .00328       -800         -800.00       -500.00       .004093       -800	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
-900.00       500.00       .003555       -900         -900.00       700.00       .003315       -900         -900.00       900.00       .003028       -800         -800.00       -700.00       .002913       -800         -800.00       -500.00       .004093       -800         -800.00       -300.00       .005869       -800	
-900.00       700.00       .003315       -900         -900.00       900.00       .003028       -800         -800.00       -700.00       .002913       -800         -800.00       -500.00       .004093       -800         -800.00       -300.00       .005869       -800	
-900.00       900.00       .003028       -800         -800.00       -700.00       .002913       -800         -800.00       -500.00       .004093       -800         -800.00       -300.00       .005869       -800	
-800.00	
-800.00 -500.00 .004093 -800 -800.00 -300.00 .005869 -800	
-800.00 -300.00 .005869 -800	
700000	
-800.00 -100.00 .009370 -800	
000 00 100 00 00000	
-800.00 100.00 .008947 -800	
-800.00 300.00 .004738 -800	
-800.00 500.00 .003946 -800	
-800.00 700.00 .003616 -800	
-800.00 900.00 .003270 -700	.00

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1

\*\*\* DISCRETE CARTESIAN RECEPTOR POI

\*\* CONC OF OTHER IN (MICROGRAMS/CUBIC

		** CONC OF OTHER	IN (MICROGRAMS/CUBIC
X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-700.00	-700.00	.002837	-700.00
-700.00	-500.00	.004189	-700.00
-700.00	-300.00	.006057	-700.00
-700.00	-100.00	.010420	-700.00
-700.00	100.00	.009859	-700.00
-700.00	300.00	.004724	-700.00
-700.00	500.00	.004397	-700.00
-700.00	700.00	.003949	-700.00
-700.00	900.00	003527	-600.00
-600.00	-700.00	.003036	-600.00
-600.00	-500.00	.004188	-600.00
-600.00	-300.00	.006458	-600.00
-600.00	-100.00	.011580	-600.00
-600.00	100.00	.010808	-600.00
-600.00	300.00	.005380	-600.00
-600.00	500.00	.004911	-600.00
-600.00	300.00	.005380	-600.00
-600.00	600.00	.004621	-600.00
-600.00	800.00	.004060	-600.00
-500.00	-800.00	.002900	-500.00
-500.00	-600.00	.003601	-500.00
-500.00	-400.00	.005218	-500.00
-500.00	-200.00	.008743	-500.00
-500.00	.00	.017213	-500.00
-500.00	200.00	.006715	-500.00
-500.00	400.00	.005846	-500.00
-500.00	200.00	.006715	-500.00
-500.00	200.00	.006715	-500.00
-500.00	400.00	.005846	-500.00
-500.00	600.00	.005127	-500.00
-500.00	800.00	.004408	-500.00
-400.00	-800.00	.003025	-400.00
-400.00	-600.00	.003835	-400.00
-400.00	-400.00	.004952	-400.00
-400.00	-200.00	.009255	-400.00
-400.00	.00	.020561	-400.00
-400.00	200.00	.007474	-400.00
-400.00	400.00	.006624	-400.00
-400.00	600.00	.005677	-400.00
-400.00	800.00	.004765	-400.00

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POI

		** CONC OF OTHER	IN (MICROGRAMS/CUBIC
X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
-300.00	-800.00	.003316	-300.00
-300.00	-600.00	.004027	-300.00
-300.00	-400.00	.005368	-300.00
-300.00	-200.00	.009348	-300.00
-300.00	.00	.024357	-300.00
-300.00	200.00	.008639	-300.00 '
-300.00	400.00	.007534	-300.00
-300.00	600,00	.006251	-300.00
-300.00	800.00	.005392	-300.00
-200.00	-800.00	.004059	-200.00
-200.00	-600.00	.004703	-200.00
-200.00	-400.00	.005696	-200.00
-200.00	-200.00	.007920	-200.00
-200.00	.00	.023386	-200.00
-200.00	200.00	.009527	-200.00
-200.00	400.00	.008564	-200.00
-200.00	600.00	.007572	-200.00
~200.00	800.00	.006679	-200.00
-100.00	-800,00	.004824	-100.00
-100.00	-600.00	.006024	-100.00
-100.00	-400.00	.007492	-100.00
~100.00	-200.00	.007056	-100.00
-100.00	.00	.004122	-100.00
-100.00	200.00	.009661	-100.00
-100.00	400.00	.011791	-100.00
-100.00	600.00	.009842	~100.00
-100.00	800.00	.008017	-100.00
.00	-800.00	.005559	.00
.00	-600.00	.007343	.00
.00	-400.00	.010323	.00
.00	-200.00	.011686	.00
.00	-200.00	.011686	.00
.00	.00	.000000	.00
.00	200.00	.017497	.00
.00	400.00	.016600	.00
.00	600.00	.012147	.00
.00	800.00	.009317	.00
100.00	-800.00	.005428	100.00
100.00	-600.00	.007086	100.00
100.00	-400.00	.009733	100.00

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT

DFAULT

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1 ,

\*\*\* DISCRETE CARTESIAN RECEPTOR POI

\*\* CONC OF OTHER IN (MICROGRAMS/CUBIC

		** CONC OF OTHER	IN (MICROGRAMS/COBIC
X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
100.00	-200.00	.011923	100.00
100.00	.00	.007042	100.00
100.00	200.00	.019802	100.00
100.00	400.00	.015498	100.00
100.00	600.00	.011588	100.00
100.00	800.00	.009006	100.00
200.00	-800.00	.005219	200.00
200.00	-600.00	.006699	200.00
200.00	-400.00	.009144	200.00
200.00	-200.00	.013223	200.00
200.00	.00	.031916	200.00
200.00	200.00	.030070	200.00
200.00	400.00	.015798	200.00
200.00	600.00	.010848	200.00
200.00	800.00	.008577	200.00
300.00	-800.00	.004950	300.00
300.00	-600.00	.006397	300.00
300.00	-400.00	.008718	300.00
300.00	-200.00	.011626	300.00
300.00	.00	.031605	300.00
300.00	200.00	.023039	300.00
300.00	400.00	.018028	300.00
300.00	600.00	.011207	300.00
300.00	800.00	.008063	300.00
400.00	-800.00	.004780	400.00
400.00	-600.00	.006156	400.00
400.00	-600.00	.006156	400.00
400.00	-400.00	.008112	400.00
400.00	-200.00	009952	400.00
400.00 400.00	.00	.026241	400.00
400.00	200.00 400.00	.017838	400.00
400.00	600.00	.018785	400.00
400.00		.012226	400.00
500.00	800.00 -800.00	.008431	400.00
500.00	-600.00	.004623	500.00 500.00
500.00	-400.00	.007239	500.00
500.00	-200.00	.008877	500.00
500.00	.00	.021792	500.00
500.00	200.00	.014526	500.00
550.00	200.00	.014520	500.00

\*\*\* MODELING OPTIONS USED: CONC RURAL FLAT DFAULT

\*\*\* THE ANNUAL AVERAGE CONCENTRATION VALUES FOR INCLUDING SOURCE(S): 1

\*\*\* DISCRETE CARTESIAN RECEPTOR POI,

\*\* CONC OF OTHER IN (MICROGRAMS/CUBIC

	·	"" CONC OF OTHER	IN (MICKOGRAMD) CODIC
X-COORD (M)	Y-COORD (M)	CONC	X-COORD (M)
500.00	400.00	.015504	500.00
500.00	600.00	.012684	500.00
500.00	800.00	.008978	500.00
600.00	-800.00	.004424	600.00
600.00	-600.00	.005460	600.00
600.00	~400.00	.006470	600.00
600.00	-200.00	.009191	600.00
600.00	.00	.018475	600.00
600.00	200.00	.013327	600.00
600.00	400.00	.012965	600.00
600.00	600.00	.012726	600.00
600.00	800.00	.009268	600.00
700.00	-700.00	.004617	700.00
700.00	~500.00	.005398	700.00
700.00	-300.00	.006136	700.00
700.00	-100.00	.012475	700.00
700.00	100.00	.014116	700.00
700.00	300.00	.010481	700.00
700.00	500,00	.011119	700.00
700.00	700.00	.010780	700.00
700.00	900.00	.008193	800.00
800.00	~500.00	.004892	800.00
800.00	-300.00	.006101	800.00
,800.00	-100.00	.011270	800.00
800.00	100.00	.012533	800.00
800.00	300.00	.009528	800.00
800.00	500.00	.009592	800.00
800.00	700.00	.009529	800.00
900.00	-300.00	.006089	900.00
900.00	-100.00	.010204	900.00
900.00	100.00	.011200	900.00
900.00	300.00	.008836	900.00
900.00	500.00	.008345	900.00